

THE READER

A REVIEW OF LITERATURE, SCIENCE, AND ART.

No. 186, Vol. VII.

Saturday, July 21, 1866.

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Wednesday, August 22.—President's Address, at Eight p.m., in
the Theatre.

Sectional Meetings as usual, from the 23rd to the 28th inclusive.

Thursday, August 23.—*Soirée* in Exhibition Building.

Friday, August 24.—Lecture at 8.30 p.m., in the Theatre, by W.
Huggins, Esq., F.R.S., F.R.A.S., "On the Results of Spec-
trum Analysis Applied to the Heavenly Bodies."

Monday, August 27.—Lecture by J. D. Hooker, Esq., M.D.,
D.C.L., F.R.S., &c., "On Insular Floras."

Tuesday, August 28.—*Soirée* in the Exhibition Building.

Saturday, August 25.—Excursions to the Midland Railway
Works at Derby, Eastwood, Riddings, Cinder Hill, Annesley,
and Newstead Abbey.

Thursday, August 30.—Excursions to the Derwent and Wye
Valleys, Charnwood Forest, and Belvoir Castle.

On and after July 30, until August 17, Life Members, who in-
tend to be present at the Meeting, may receive their Tickets by
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No. XXIX. Edited by GEORGE HENRY LEWES.

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CHAPMAN & HALL, 193 Piccadilly.

SATURDAY, JULY 21, 1866.

CURRENT LITERATURE.

UNIVERSAL BIOGRAPHY.

The Biographical Treasury: a Dictionary of Universal Biography. By Samuel Maunders. Reconstructed, Revised, and partly Re-written, by William L. R. Cates. Pp. 1,154, 10s. 6d. (Longmans.)

IT is said that the "old Lempriere," the uncritical, strictly biographical Lempriere, which talked about the old gods and goddesses as if it had a thorough belief in everything they were reported to have said and done, and which disdained to insinuate into the schoolboy mind anything like doubt about the actual existence of the most mythical personages, did more to educate that generation before whose minds the possibility of anything better had never arisen, than any other volume in the library of those who received a "classical education." This hypothesis very probably is correct, but at all events the statement shows of how much importance the "Biographies" which are placed in the hands of the young have approved themselves to be. Such an opinion could not have been formed without very good grounds and opportunities for observing the comparative popularity of the text-books which form the intellectual pabulum of most educated persons between the ages of ten and seventeen. The appearance, therefore, of a new edition of such a standard work as "Maunders's Biographical Treasury," compels us to more than an ordinary interest. We examine it not only to study its special merits, but to ascertain what is the precise degree of criticism the rising generation desire to assimilate as they read of their favourite heroes; how far the scepticism as to the actual entity of mythological legislators and sages has been determinedly carried; how far our children are to be taught things which are possibly as dubious after all as the eternal stability of the earth, or the capricious uncertainty of the winds. The editor of such a book must possess rare qualifications, and amongst them we are sure to find an unerring faculty for striking out the happy mean between too credulous a trust in old "authorities," and too great a leaning towards the disturbance of well-established facts. "As a general rule," says Mr. Cates, in his short and modest preface, "mythical names are excluded;" such, for example, to apply as we did ourselves an immediate test, as "Hercules," or "Osiris." But not "Romulus," and very properly. The notice of this representative founder of Rome hits the happy medium between absolute confidence and Lewesian scepticism:—

ROMULUS, mythical founder and first king of Rome. According to the legends, he was the son of the vestal Rhea Sylvia, by the god Mars; Sylvia being a daughter of Numitor, rightful heir of the king of Alba, but deprived by his brother. Exposed with his twin-brother Remus, the babes were suckled by a she-wolf, and afterwards brought up by a shepherd. Their parentage was discovered, and they determined to found a city on the banks of the Tiber, the scene of their exposure. The right to choose the site was acquired by Romulus, and Remus, not acquiescing in his disappointment, was slain. Inhabitants for the new city were found by establishing a refuge for murderers and fugitive slaves on the Capitoline hill, and by carrying off the Sabine maidens at a feast to which they were invited. This led to war with the Sabines, which ended, through the intervention of the Sabine women, in a union of Romans and Sabines under their two kings, Romulus and Titus Tatius. The latter was soon slain, and Romulus reigned alone. He was regarded as the author of the fundamental division of the people into tribes, curiae, and gentes; and of the institution of the senate and the comitia curiata. After a long reign Romulus disappeared—taken, it was said, up to heaven in a chariot of fire. The date commonly assigned for the foundation of Rome is B.C. 753.

Take as another example that of a sage whose individuality is less doubtful:—

BUDDHA, GAUTAMA, also named SAKYA MUNI, the founder of Buddhism, lived probably in the sixth century B.C. His father was king of Behar, and his mother's name was Maya. Early distinguished both for his personal beauty and superior intellect, he is said to have been deeply affected by the observation of the sins and miseries of the world, and to have retired into solitude for some years. He then appeared as a religious teacher, and went through various provinces of India propagating his doctrines, a kind of reformed Brahmanism. He is said to have lived till his 80th year, and the date usually given for his death is 543 B.C. But his appearance is by some placed as early as the fourteenth, and by others as late as the fourth century B.C. It is certain that his religion was triumphant in Hindostan in the middle of the third century B.C.

Nor is the article on "Homer" less judicious, though carrying criticism a little further:—

HOMER. This great name, or shadow of a great name, is retained in the "Biographical Treasury," not for the purpose of once more repeating the details of the traditional story attached to it since the days of Herodotus, but partly from reverence for its ancient glory, and unwillingness to see it wholly disappear from the roll of famous names; partly on account of the place which it must for a long time hold in literature and in the common speech of men; and chiefly for the purpose of stating that there is simply no evidence at all for the common tale. That Homer was the greatest poet of Greece and of the ancient world; that he lived about the eighth century B.C., and was an Asiatic Greek; that seven cities disputed for the honour of being his birth-place; that he was blind and poor, and went about reciting his verses for bread; that the "Iliad" and the "Odyssey" were his works—such are the main items of the almost universal and unquestioned belief respecting Homer in the ancient world: a belief which modern criticism has not only shaken, but shown to be untenable. To sum up all doubts and denial on the matter in one word—No one knows even so much as the fact of the existence of a great poet named Homer. The Iliad and the Odyssey are facts beyond doubt; their high antiquity, their immense importance as sources not only of later poetic inspiration, but even of the popular religious faith of the Greeks, and their incalculable influence on all subsequent literature, are also unquestionable. But of the authorship of these wonderful poems we can only confess, like Socrates of vaster problems, that "we nothing know except that we know nothing." It is, however, established by recent criticism that the Iliad is not one poem; that the groundwork of the Iliad is the same as that of the Odyssey; and that the tale of each is at bottom identical with that of the Volsunga Saga and the Nibelung Song, as well as with that of the greatest Eastern epics.

The excellence of such a work as this depends a good deal upon its catholicity and comprehensiveness. As to the latter, we have not yet failed to discover any old friend in his proper niche, and have made acquaintance with many new ones. The fabricator of historical or sensational novels might find many a fresh character ready drawn for him here. How many of us have heard of

JORGENSEN, JORGEN, a Danish adventurer, who usurped for a time the government of Iceland. He was born at Copenhagen in 1779. He entered the English merchant service, and afterwards the navy, but returned to Denmark, and serving in the war against England, was taken prisoner and brought to London. In 1809 he accompanied an English merchant to Reykiavik, the capital of Iceland, and in consequence of trade with the English being prohibited, he landed with a party of twelve sailors, and without bloodshed, or even resistance, carried off the governor, proclaimed the island free and himself Protector. This singular revolution was brought to a close in about two months by English intervention, and its author was again brought to England. He published several books, was sentenced to transportation for theft, and was sent to Australia in 1825. He is supposed to have died there soon after.

But the catholicity is still more admirable. There is a determination evident to bring

into relief what every man has done; no matter in what department or capacity, or from what motive. The successful and the unsuccessful, the martyr and the conqueror, are all indicated with the appropriate epithet. The pages are pre-eminently fitted for the young, because they encourage in an unconscious manner everything which is laudable, and denounce or keep in the background altogether what is vicious. The novice in every science will find each name in the muster-roll of his predecessors illustrated and "placed." The general student has a sure guide in chronology, and in the leading facts of all the names he may light upon; and to glance at a minor point, we all have an authority we can trust in the orthography of proper names—by no means a small advantage to those who wish to give honour where honour is due. So careful have both publishers and editor been to make their labour complete, that we have "William Whewell" in his due place almost before we have realized the fact that he is no longer amongst us.

The issue of such a publication must raise feelings of pride in all literary men. It could not have been made possible without the combination of many minds. The satisfaction its final completion has afforded to those more immediately employed upon it is probably not very different from that enjoyed by the "Encyclopædists." That, however, was alloyed by severe laws against the press, and it was in peril of his liberty and fortune that a publisher attached his name to the mighty folios. We live in more fortunate times. Mr. Cates may enjoy the results of his three years' labour. On the family name at the bottom of the title-page we must say a word. It is a delicate thing for a journal to give their fair meed to publishers. But in this case we shall fulfil our duty. These efforts of a great house to show itself worthy of fortune deserve at least open recognition. If firms utilize the faculties of authors, they also collect those reservoirs which keep up the supply. These Banks of Literature afford materials for drafts which can never be dishonoured; and the monuments of their successful enterprise will be cherished when all motives for the voice of flattery have disappeared. Their annals will always form no inconsiderable part of the history of the British press. Two of the principals of the first London firms were born nearly at the same time—John Murray in 1778, and Thomas Norton Longman in 1770; nor were they long divided in their deaths. Their friendly rivalry was conducted throughout their prosperous lives in the same honourable spirit that has characterized their successors. The story of the success of one is the counterpart of that of the other; and referring the wise to the old saw, *mutato nomine, de te*, we will conclude our extracts with the life of "Murray," as told by "Longmans":—

MURRAY, JOHN, F.S.A., the eminent publisher, known wherever the English language is known, was born in 1778. Mr. Murray was a man of considerable literary acquirements; and while his singular acuteness and sound judgment insured his success as a man of business, his fluency, his store of anecdote, and a certain dry quiet humour, closely allied to wit, rendered him an agreeable companion for such men as Scott, Byron, Moore, Southey, Lockhart, and a number of other celebrated writers, who were at various times his guests, and at all times, from their first acquaintance with him, his fast friends. In their dealings with him, literary men were soon convinced that no paltry attempts would be made to depreciate real merit, or to depress below a fair remunerating standard the wages due to intellectual labour; nay, so generous were his impulses, that if he found a work profitable to him beyond what he had calculated upon, he frequently added to the stipulated price of copyright—sometimes even doubling it! Of this we might adduce several instances, did our space permit: we shall conclude by observing, that as he was one of the most successful publishers, so he highly deserved success, were it only for his wise and consistent liberality. Died, June 27, 1843, aged 65.

THE READER.

21 JULY, 1866.

THE COAL QUESTION.

The Coal Question. By W. Stanley Jevons, M.A. Second Edition, revised. 8vo, pp. 383, 10s. 6d. (Macmillan and Co.)

HAVING reviewed the first edition of Mr. Jevons' work at some length in July of last year, we are now concerned only with the additional statistical information which is here given in support of the views enunciated by the author. The question raised by Mr. Jevons has been considered of so much importance as to justify, after considerable discussion in the House of Commons, the appointment of a Royal Commission, the members of which have been already gazetted. Mr. Jevons, in placing before his readers the various sources of England's prosperity, attributes no inconsiderable portion of our success to the possession of coal, apart from the existence of iron and other minerals. He shows most clearly how that prosperity has continued to increase as our manufactures have been developed by the agency of steam, and how dependent those manufactures are upon an ample supply of coal. It is, therefore, with no slight cause for alarm that he regards the continued drain upon our coal-fields, the area of which is necessarily limited, and the exports of the produce of which has increased so rapidly as to render it doubtful whether at the present rate those coal-fields may not be worked out within a period variously estimated at from 200 to 2,000 years. Where so much difference exists in the estimates which have been made by persons assumed to be competent from their position to judge as to the extent of coal yet to be raised, it appears to us that it will be difficult for the Commission to report definitively upon this portion of the inquiry.

The results set forth in the chapters on the "Cost of Coal" and consequent "Price of Coal," which increases as we are compelled to go deeper, lead the author to further discussion on the necessity of "Economy of Fuel," and the "Supposed Substitutes for Coal;" but we are not prepared to endorse the remarks of the author to be found at page 3 of his "Introduction and Outline," that "England's manufacturing and commercial greatness, at least, is at stake in this question; nor can we be sure that material decay may not involve us in moral and intellectual retrogression."

We would refer our readers to the most interesting chapter "Of British Invention" and to the following extract, showing that

Many remarkable instances have occurred of the commercial replacement of one chemical substance by another. The progress of commerce often depends on such replacements, as when the palm and cocoa oils are used instead of tallow and linseed oils; silk instead of wool, cotton instead of flax, Spanish grass instead of rags, wheat instead of rye or buckwheat, turnips instead of hay. So far as such substances are beyond the constructive arts, and of purely organic origin, they are beyond our present subject. But many of the more important substitutions are due to coal. Most chemical processes depend on the use of heat; and our cheap fuel has enabled us to raise many great branches of chemical manufacture. Our Cheshire salt-mines, with the aid of cheap coal, give us a supremacy in the salt trade, reversing the import trade which used to be carried on when salt was made by the natural evaporation of sea water on the Coasts of France, Spain, and the Mediterranean. Cheap salt, again, with abundance of fuel, was made to yield carbonate of soda, which replaced, with a great reduction of price, the soda formerly got from kelp or barilla, the ashes of seaweed. This cheap supply of alkali is all important in our soap and glass trades, and in a great variety of minor chemical manufactures. Potash, on the contrary, still continues to be obtained from the ashes of wood, and is, accordingly, imported at a high price from Canada or Russia; if ever it be extracted from its natural source, in felspar, it must be done by an abundant use of fuel. When the Government of the Two Sicilies placed an exorbitant tax on sulphur—Italy having, as it was thought, a monopoly of native sulphur—our manufacturers soon had resort to the distillation of iron pyrites, or sulphide of iron, and it has been remarked by Liebig, that

sulphur could have been extracted, if necessary, from gypsum or sulphate of lime. Cheap fuel would still be the all-important condition.

It will, of course, be for the Commission, after due and searching investigation, to report whether the views of Mr. Jevons are exaggerated; but they cannot withhold from him the praise to which he is entitled for the very careful manner in which he has arranged the facts upon which his opinions are based; or deny that he has not been justified by those facts in raising a question of such vital importance to the future commercial prosperity of this country. Known as the largest exporters of coal and of manufactured iron, can it be said we should regard with indifference the probable fulfilment of a contingency which would so materially affect that prosperity? and we are deeply indebted to Mr. Jevons, not only for making known our true position, but for the very valuable suggestions he has made, by which the danger of that position may be modified. Mr. Jevons, in his chapter on the "Supposed Substitutes" for coal, passes over the probable advantage to be derived from the use of petroleum and paraffin, and apparently doubts the possibility of successfully applying them in marine boilers as substitutes for coal. The experiments, however, recently made at Woolwich, to be shortly patented by Mr. Richardson, and the results of which are referred to by a contemporary, will, we apprehend, go far to remove those doubts, and in their universal application add another instance of commercial replacement to those already mentioned by our author, and quoted by us.

The official report of the rock-oil experiments at Woolwich having been made to the Admiralty, we may now add something to our former account of these important trials, especially as the continued decrease, if not the actual exhaustion, of our coal-fields is at this time a subject of national consideration. The engineers of the Woolwich Dockyard have returned to the Admiralty, we hear, a statement, without comment, of what Mr. Richardson has done, and have accompanied their statement with a drawing of the apparatus by which the results have been obtained. When it is known to every practical engineer that 7½ lb. of water per lb. of the best steam coal is the maximum quantity in ordinary practice; that not more than 3½ lb. to 4 lb. of water are done by common coals, and 6½ lb. is the usual rate for railway locomotives, what need could there be to add one word of remark to a table of practical experiments showing 13 lb. for American rock oils, 15 lb. to 17 lb. for Burslem, and above 18 lb. for the Torbane Hill oil?

Taking the average evaporation effected by coal at 6 lb., we may fairly urge that the best mineral oil, being three times as strong as coal in the quantity of heat it generates, and evaporating three times the quantity of water in the same space of time, is just as cheap as coal if it cost three times as much to distil it from the shale as it does to get the coal out of the earth, and convey it to our furnaces. What has been done at Woolwich has been to burn such oil in a boiler-furnace practically, and to beat coal with it. It is no use any longer to question results. The mineral oil has been burnt for days together, just as it might be burnt for months together, and it has raised steam effectually, efficiently, quickly, steadily, and continuously. It is now only a question of time how soon the world will accept the fact, and engineers begin to employ it. Whatever further experiments may be probably undertaken before oil is adopted by the Admiralty, sufficient at least has been done, and under such superintendence that the results can neither be doubted nor disputed, to prove that there is a fuel capable of superseding coal for steam and mechanical purposes, that it has been practically tried and applied, and which only awaits the demand to come into the market at economic prices.

Granted that the supply from these sources may, like coal, be, as Mr. Jevons suggests, limited; yet the energy of the Anglo-Saxon is such, that the Englishman will yet find out the way to keep his country at the head of the civilized world, and that as one source of our present wealth is exhausted, new discoveries will have been perfected, by which we may yet hope to retain that position, without the necessity of closing our busy factories, or of teaching our sons the pretty art

of gardening instead of the more stalwart business of smithing and forging.

THE DIVINE GOVERNMENT.

The Divine Government. By Southwood Smith, M.D. 5th Edition. (London: W. Trübner and Co.)

DO but consider what it is to suffer extreme pain for ever and ever; to suffer it day and night, from one day to another, from one year to another, from one age to another, from one thousand ages to another, and so adding age to age and thousands to thousands, in pain, in wailing and lamenting, groaning and shrieking and gnashing your teeth; with your souls full of dreadful fear of amazement, with your bodies, and every member of them, full of racking torture; without any possibility of getting ease; without any possibility of moving God to pity your cries; without any possibility of hiding yourselves from him; without any possibility of obtaining any manner of mitigation, or help, or change for the better." Such is the description given by one of the advocates for the doctrine of eternal punishment of the future sufferings of the wicked. To which he adds: "Besides, their capacity will probably be enlarged, their understandings will be quicker and stronger in a future state; and God can give them as great a sense, and as strong an impression of eternity as he pleases, to increase their grief and torment." Well may the author of the book before us say, "What a tremendous, what a savage thought! What a thing is system! To think that a man, possessing a heart of flesh, and an understanding enlightened by the Christian religion, can steadily contemplate such a scene as this, and imagine it is a just exhibition of the conduct of the Author of this beautiful and happy world." In these words our author has given us an epitome of the whole argument of his book, the design of which, as stated in the advertisement to the present edition, is "to prove that the whole human race is destined to arrive, through suffering, at a state of ultimate purity."

It might be thought that no laboured argument would be necessary to convince a Christian of the absurdity of the doctrine of eternal punishment. A reference to the goodness of God and to the Divine spirit of mercy which breathes in all Christ's teachings, ought to be sufficient for that purpose. When to this is added a consideration of the frightful nature of endless punishment, as depicted in the words of Jonathan Edwards we have above quoted, the conviction ought to be irresistible. Unfortunately, however, it is not so; those who are supposed to have imbibed most fully the spirit of Christ being but too often the strongest in their assertion of the eternal punishment, not only of the wicked, but also of those who unfortunately differ from them in the understanding of the words of Scripture. No doubt this belief, if an opinion may be so called which is generally the result of prejudice arising from defective teaching, rather than an inference of reason, is sincere, and so far deserves to be treated with respect. It is desirable for this reason, rather than through any prospect of removing the belief—a result which all experience of the persistence of religious error forbids us to expect—to examine the grounds on which it was originally formed, and to show its irrational character. This our author has attempted to do, and, in our opinion, with the most complete success.

The arguments used by our author, although his reasoning is as a whole conclusive, are not, however, equally strong. When he insists on the goodness of God, as shown in the enjoyment which life affords, and in the universality of that enjoyment, and on the object of punishment being *corrective* and not the infliction of pain, we think his reasoning is unimpeachable. Equally conclusive are the objections he urges against the doctrine of eternal punishment in opposition to such arguments as the infinite evil of sin, and the requirements of the Divine justice

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and sovereignty. He is successful also in proving how weak is the reasoning in support of that doctrine, derived from the use in the New Testament of the terms "everlasting" and "eternal" in relation to the state of the wicked in the future life. All the arguments derived from Scripture, either in opposition to the doctrine of eternal punishment or in support of that of *universal restoration*, are, however, necessarily inconclusive. Rational criticism, doubtless, requires that the words *αιων* and *αιωνιος* should "not give the sense of endless to, but receive it from, the subject to which they are applied." But it by no means follows that those who used such expressions did not intend them to have wider signification than can always consistently be given them. The Greek words denoting future duration appear to have had an indefinite sense, and whether they are to have a more limited or a more extended application depends on the intention of the persons using them. This intention cannot, however, be fairly gathered from the subject, and we must look for it, therefore, in the mode of thought of the writer, or if that cannot be discovered, in that of the age and people to which he belonged. As to the latter, unless it be said that all references to endless punishment by Jewish writers are merely metaphorical, we think it cannot be denied that the Jews before the coming of Christ held the opinion that the good would hereafter enjoy eternal happiness and the evil suffer eternal misery. This is quite consistent with the claim of Christianity to have been the first to teach "life and immortality," for its special resurrection is of the *body*, a doctrine which was quite unknown to any earlier religion. But we think it may be gathered from the New Testament itself that the intention of its writers was that the words *αιων* and *αιωνιος*, where used in relation to future punishment, should be understood in the sense of eternal. This is evident from the persistent use of these terms, without the addition of any expression by which their apparent sense may be qualified, and without the application in relation to the same subject of any words having a less extended meaning. Another consideration from which the intentions of the New Testament writers in the use of those terms may be gathered, is the absence of any certain reference to the doctrine of *universal restoration*. The statements that "God desired not the death of the wicked," that "Christ died that all might be made alive," and other expressions to the like effect, are much too general for an argument to be founded on them. Several passages which our author inserted in the earlier editions of his work as express affirmations of the doctrine of universal restoration, he afterwards thought it necessary to give up, and we think it could be shown that those he has retained are far from giving the support to that doctrine our author imagines.

The fact is, our author has weakened his argument by adhering too closely to the written traditions of the Old Testament. Notwithstanding his Unitarian bias, he originally framed his argument on the assumption that the present condition of mankind is the result of the supposed fall of our first parents from a state of perfection. This supposition creates many difficulties which have afterwards to be removed, and, although the ultimate result is much the same in each case, yet the theory of the final perfection of the human race would be more firmly established by a line of argument which would require the rejection of the orthodox opinion of man's primitive state. The last edition of the work before us, published under the superintendence of our author, appeared in 1826, and we cannot help thinking that, if he had lived to edit the present one, it would have been found that his line of argument had been considerably modified to accord with the results of recent inquiries. A man with so active and penetrating a mind as Dr. Southwood Smith must have seen that man's present condition is the natural

result of his constitution, and that he should, therefore, be called an *imperfect*, rather than a fallen creature. This is the only key to the mystery of evil, both natural and moral, and by the aid of that truth alone can the reconciliation between Christianity and science be effected. Evil is the necessary accompaniment of the life of an imperfect being among imperfect beings; but with every decrease in imperfection is there a lessening of evil. The existence of the human race, instead, therefore, of being a sorrowful struggle to regain a lost position, is a gradual development of the powers of the human mind, the ultimate result of which must be that man will "become as God." It is only on the supposition that imperfection is the *natural* state of man, that the existence of great masses of mankind in a state of helpless barbarity and wretchedness can be reconciled with the goodness of God. Such a state necessarily precedes one of perfection, which, in relation to the present life, is of the *race* and not primarily of the individual. Mankind—we are almost tempted to say the *white* race—is as a whole ever progressing towards a higher state of physical and mental development, but individuals appear to be little cared for when they stand in the way of the "resistless march of nature." The notion—which is essential to our author's theory so long as it rests on the unsatisfactory basis of the fall—that happiness is the end of man's existence must be discarded. The perfect development of man's higher nature is the real object of life, which *may* be accompanied by happiness, but which we can easily imagine may often lead to great misery. Probably happiness is the necessary accompaniment of the development of man's faculties, taking his existence as a whole, and the fact that in this life misery so often predominates over happiness as the result of such development may be taken as an argument in favour of a future life. A much stronger argument may, however, be derived from the situation in which the majority of mankind are placed, which renders it utterly impossible that they can attain to more than the very slightest degree of mental development. This argument may be extended to include the evident insignificance which the intelligence of the wisest man bears to his capacity. We may well imagine that an opportunity will be afforded for the faculties of every man to attain to the utmost perfection of which they are capable, and as we know no limit to their capacity, we may suppose the future life to be eternal. What the nature of the future life will be who can say? That the mental state of each individual after death will resemble that which distinguished him here, we have every warrant to believe, and possibly the future life itself will not differ so much, except in its grosser or more material details, as is generally imagined. Whatever may be its particular pursuits, we cannot doubt that the *universal perfection*, not restoration, of the human race must be the goal towards which progress will ever be made, although probably without ever being reached.

In conclusion, notwithstanding the remarks we have made, we think the book before us deserves all the praise which its reproducers have bestowed on it. Probably there is more likelihood of its convincing in its present form the opponents of the doctrine it enforces than there would be if its arguments were of a more advanced character. We have great pleasure in recommending it to the thoughtful perusal of our readers.

INTERNATIONAL POLICY.

International Policy. Essays on the Foreign Relations of England. (Chapman & Hall.)

THIS is, if we mistake not, the first avowed attempt on the part of Positivism to apply its principles to the actual improvement, as distinct from the ultimate reorganization, of the government of modern society. The first three essays alone are concerned with Continental affairs, and form in themselves almost a separate work. The idea of

Humanity, which has become too familiar to need any exposition here, has given birth to an offshoot which may be called "The West," or "Occidentality." The notion is, that the West of Europe constitutes what Comte called the *elite* of Humanity, and must take the lead in the future progress of the human race. First, what are we to understand by the West? Mr. Congreve includes under this term England, France, Spain, Italy, Germany, Greece, and Poland. Russia he is at great pains, and by very elaborate arguments deduced from considerations of history and anthropology, to show has only by the insufficient coherence of the true Great Powers of Europe, been able to exercise a disturbing influence on the policy of the vanguard of man. The events now passing before our eyes will evidently in his opinion tend still more to relegate Russia to her proper task of civilising and amalgamating the barbarous tribes of Northern Asia. Under the other names he includes more than the mere words convey to us:—

The Spanish populations, both in the Old and New World, are the equivalent of Spain, as part of Western Europe. England enters the European concert as the short expression for the Anglo-Saxon populations of the United States, not less than for its own immediate colonies, Canadian or Australasian. The German population comprises not merely Germany Proper, but its natural appendages—Holland, German Switzerland, the Scandinavian Kingdoms, and any colonial adjuncts, whether separate colonies, or large masses of German settlers.

Poland must be incorporated with the West through Germany; and Greece, we suppose, through Italy. Mr. Congreve no more approves of the principle of nationalities than he does of the so-called Balance of Power. In fact, he rather prefers the latter. Either is suited only to the transitional state through which Europe is now passing; and there is nothing gained by substitution; or, as President Lincoln said, "Don't swap horses while you are crossing the stream."

The barriers of religious, national, and commercial separation fall before the new unity. We cease to be solely or primarily members of such or such a Western nation, England or France. We become primarily Western, with an immunity from all the evils which have clung around the exclusive prominence given to the more restricted associations; free from the poverty which now attaches to all our political conceptions, relieved from the antagonisms which render fertile of dangers our actual political and international order.

The two essays, "England and France" and "England and the Sea," proceed to the application of this policy. In the latter, Professor Beesly speaks his opinions boldly. "What defence can we make to the charge loudly urged against us by the common voice of our neighbours, that we have erected upon a basis of violence and injustice a maritime supremacy incompatible with the orderly and peaceable development of European civilisation?" He then sketches the history of this supremacy, which he dates from the battle of La Hogue. That he recommends the surrender, or rather, whilst there is time, the graceful donation of Gibraltar to the Spaniards, will be at once understood. We agree with him the nation would care very little about it when it was once done. But let us hear the Professor himself; for nothing but extracts can give a proper idea, not only of what he recommends, but of the reason why:—

The aristocracy and the *bourgeoisie*, acting from different motives and in different ways, are alike responsible for our foreign policy. The industrial class, although its ignorance has sometimes made it the tool of parties, cannot fairly be charged with any portion of the national guilt and folly. The wealth, greatness, and glory of England have meant very little for the working-man. Rather, they have adjourned his emancipation. It is his interest—and it cannot be much longer concealed from him—that public attention should be concentrated on the state of England. The recasting of our constitution, the redistribution of taxation, the substitution of a

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system of education for a State Church, the limitation of proprietary rights in land, poor-law reform, sanitary reform, legal reform; in a word, the subordination of private interests to public utility—these are questions that cannot be dealt with even by public opinion, while our energies and attention are wasted on the management of two hundred millions of people who do not belong to us. The direct, though not continuous, intervention of working men in the government of the country will be signalized by a refusal to let it be encumbered any longer with this millstone of an empire. To the working man it is of little consequence whether the Union Jack flies at Gibraltar, Quebec, and Calcutta, but of infinitely great importance that he have a fair share of the profits of production; that the necessities and comforts of life be within his reach; that poison be not infused into the air he breathes and the water he drinks; that rational education be provided for his children; and that his legitimate dignity be not wounded by institutions designed to consecrate and perpetuate social inequality. The present generation must make up its mind to see these questions raised, and the next, probably, to see them settled. Some two generations have passed since Burke complained that the age of chivalry was gone; and soon some *bourgeois* orator will be lamenting that the age of broadcloth has so quickly followed it. Periods of transition are naturally transient.

Most sorely of all he thinks we want a recognised canon of morality, with a competent organ of interpretation:—

In the much-misunderstood Middle Ages society was not left without such direction. There was a criterion of truth implicitly accepted by all the Western nations. The weakness of its objective basis did not detract from its value so long as its deficiency in that respect was unnoticed. The moral precepts grounded upon it were, for the time, admirable, and there was a spiritual authority side by side with the temporal, to interpret, to counsel, and to reprove. But the unreal foundation of that noble fabric has crumbled away under the attacks of science; and morals are left without shape or system, with no definite sanction, no criterion to which all are content to appeal. In place of a universal Church, devoting its energies to the sublime task of controlling the selfish instincts and promoting practical morality, we have now a *mêlée* of rival quacks deafening us with a discordant jargon, which to educated men means nothing. What wonder if we stop our ears—some with business, some with intellectual pursuits, some with pleasure? So-called churches, which have absolutely nothing to tell us on any of the important questions of the day, which are no longer ahead or even abreast of the secular world in their moral teaching and discipline, have lost their *raison d'être*. Secure in the affections of the uneducated majority, they may long afford to ignore the timid and tortuous sap of the savant who has nothing to substitute for what he is undermining. But there is a rivalry they cannot disregard. Whatever a clergy may think, no religious organization can long hold its ground in popular esteem when confronted by a loftier morality than its own. Either it must prove its expansive force by adapting itself heartily to the higher standard, or it will fall as Polytheism fell before Christianity, as Eastern Christianity before Islam, condemned by the heart even more energetically than by the intellect.

The remaining essays may merit another notice. The struggle between the principles of which we have given an idea, and those which govern our public spiritual organization, will be severe, and must lead to a modification of both. Such a manifesto as this cannot be passed over in silence.

MARY CONSTANT.

The Romance of Mary Constant. Written by Herself. 1 Vol., post 8vo, 10s. 6d. (Saunders, Otley, & Co.)

THE heroine is represented as a disinterested, high-minded Englishwoman, whose sole object is the happiness of her younger sister Fanny, and of a bosom friend, called Eleanor. Gérard Leblanc is a light-hearted, agreeable Frenchman, in the early part of the story engaged to Fanny, a pretty girl of eighteen summers, who, having been brought up under the charge of her uncle and aunt in Paris, has been by

them affianced to Gérard. Her sister, our heroine, however, discovers that the affections of her friend Eleanor have been previously won by the same Gérard. She abruptly breaks off the engagement, and, much to her aunt's astonishment, takes her sister away; when, after spending some time in the neighbourhood of Berne, where they are joined by Eleanor, they eventually return to England, and settle down in a quiet country village, where they have some property. Two years after their return, Gérard, who is in England on some business, appears on the scene, and marries his first love; whilst Fanny is united to a young doctor, the son of an old friend, leaving the heroine with the prospect of a solitary and lonely existence, or, in the words of the story—

Life without love is loneliness, is sorrow,
Is like a rainy day without hope of sun to-morrow.

It is tasteless, it is hopeless, it has no sense or meaning;

'Tis like a winter without snow, a harvest without gleaming.

It is wearying, it is wearing, it is dull, and it is long;

'Tis like a swallow without wings, a lark without a song.

Altogether the story is well written from first to last.

JAMAICA.

Jamaica and the Colonial Office: Who Caused the Crisis? By George Price. (Sampson Low, Son, & Marston.)

A RESIDENCE in Jamaica of twenty-two years, which only terminated in May, 1865, must entitle Mr. Price to a hearing upon "the Jamaica question." He has taken great pains to fortify his opinion by long extracts from official documents. He has been a member of the Executive Committee or Government of Sir Henry Barkly, Sir Charles Darling, and for some time of Mr. Eyre, and the head of the magistracy of the precinct of St. Catherine, in which Spanish Town is situated. In these capacities, especially in the latter, he has had ample opportunity of observing the habits and character of the coloured men, who form about nine-tenths of the population of Jamaica. He pronounces without hesitation that this race are capable of governing themselves; and if it is true that the white man is rapidly disappearing from off the island, it is absolutely essential to its cultivation that it should be so. Mr. Mill has now compelled the Government to declare its intentions as to Mr. Eyre and other officials concerned in the executions which took place during the recent insurrection; and as "the following pages are laid before the public with the view of assisting them in forming an opinion as to the motives which caused Mr. Gordon's 'summary' trial, *Anglicé*, summary death," their contents cannot be neglected. We recommend the opinions of Mr. Price upon the Negro to the Anthropological Society:—

The negro, as compared with the white man, is sober. On the roads in the environs of Kingston, and in its streets, to one drunken negro twenty drunken white soldiers and sailors may be any day seen; yet the lower class negro of Kingston is probably the worst to be found in the island.

The negro is temperate in eating; requires but little variety of food; takes but one large meal in the day, and then eats as much as he can, as millions of white men in England do three times a-day when they can get it.

The negro is as cleanly as the Englishman of the lower classes, to whom clean water is unknown. It is only in the lowest class negro that one perceives the "*Bouquet d'Afrique*."

The negro in temper is very like the Irishman, and therefore very superior to the Englishman in that respect.

The negro is addicted to much lying, and perjury is frequent in the courts of law. In these he outstrips the Englishman, but not much perhaps the Irishman.

Most negroes of all classes are religious hypocrites, but are scrupulous about baptism. They attend church or chapel regularly, and are frequent communicants. They believe in Obeah, and the professors of that art believe in slow poisons. The great mass of Englishmen profess

no religion and attend no church. Slow poisoning is practised by Englishmen of high order of talent and education.

The negro is inconceivably lazy, hates hard work, and never undertakes it voluntarily. When he works hard he sweats profusely, and having done both for a few days consecutively, he generally gets fever, ties up his head, and basks in the sun until he is well again. The stimulus of hunger and cold may have something to do with the industrious habits of Englishmen, but both are generally wanting in the tropics. Possibly, if the climate, and soil, and products of Great Britain were tropical, and the fee-simple of the richest land could be bought there in any quantity, as it can in Jamaica, at 17. an acre, Britons of the working class, in less than one generation, would become as indolent and unambitious as they themselves always become, after a very few years' residence in Jamaica, and as the negro undoubtedly is. The negro in the West Indies is certainly infinitely less disposed to physical and mental efforts than his northern brother.

The low class negro in Jamaica, on the whole, is very bad; but is he worse than the white man of the same class? His vices may be partly caused by the withdrawal of all civilizing influences, by the imperial policy pursued towards his employer, from the moment he was made free. What would be the probable effect of the withdrawal of all civilizing influences from England, on the labouring classes, with cheap land obtainable in any quantity, and a tropical climate?

One generation has scarcely passed since the negro was made free. How many since Britons ceased to be slaves?

Mr. Price attributes the insurrection principally to what he calls the "Tramway Swindle," for the patronage of which he considers Mr. Eyre responsible; but this was not the sole cause:—

This transaction, and the frauds and forgeries also permitted at the Main Road Board by the neglect of Mr. Eyre and his then Government, and his useless appeal to the black constituencies at that time, in order to keep his Government in office, and the excitement caused thereby; and the readiness with which the Colonial Secretary has believed and approved of the unfounded "reasons" assigned by Mr. Eyre for that dissolution; and the reward conferred on him of the full government of the colony, after two and a-half years of unmitigated hostility between himself and the Assembly, and the largest section of the colonists; and the practical denial of the Colonial Secretary of the responsibility of any one in the colony; Mr. Eyre's uncalled-for and extreme severity towards several public officers, and towards the late Mr. Gordon as a magistrate; his great unpopularity, and disregard of the dignity of his high office—have together been productive of that general irritation and disaffection which have at last culminated in what he has designated "rebellion."

Four chapters, at least one-half of the book, are devoted to the "Tramway Question." They contain many original documents. We should despair of interesting the majority of our readers in it, and can only point out this as the most authentic source of information on the point. The book gives no account of the rebellion itself; that has been done by others. The author calls the attention of the public to causes quite ignored by the Royal Commissioners:—

Mr. Gordon's sedition, if any (and his dreadful end), was due to the general misgovernment of Jamaica by Mr. Eyre, which though made known to the Duke of Newcastle received his highest approval and reward, both subsequently confirmed by Mr. Cardwell.

It was due to that neglect of duty by one Colonial Secretary, who allowed abuses of great magnitude to arise in Jamaica, and to another, who notwithstanding incessant official and other remonstrances, allowed them, not only to continue unheeded and unchecked, but with a perfect knowledge of their existence, persisted in confirming the reward, and continuing the approval, by his predecessor, of the Lieutenant-Governor, who had permitted such wrongs to exist.

It was due to an unconstitutional rule of the Assembly, framed with the knowledge of the Governor, and continued with the permission of the Colonial Secretary; and it was especially due to the uncalled-for attack, commenced by both, on the Assembly, immediately after the election of 1863, which has resulted in its unnecessary anni-

hilation, and in the arbitrary disfranchisement of the entire people of that colony.

Those causes have led to the violent death, after a mock trial, of the most prominent and consistent political opponent of the late Governor of Jamaica.

It will be seen that the nature of Mr. Eyre's guilt is not considered here. He is merely exposed as an incompetent Governor. If Mr. Price be correct, the Colonial-office know nothing about the government of the coloured races. They have mistaken constitutional opposition for open "rebellion." The issue raised is a very grave one. A special training will soon be held necessary for those who are to deal with the coloured races. Here is an opportunity for young Anthropologists. A sound text-book on the first principles of the government of Her Majesty's non-Anglo-Saxon subjects would be of more service than interminable discussions on the affinity between men and monkeys.

AFTER THE STORM.

After the Storm; or, Jonathan and His Neighbours in 1865-6. By J. G. H. Skinner, M.B. 2 Vols., pp. 681, 21s. (Bentley.)

AT no period of its history has the American Republic stood so well in the eyes of the world as it stands at the present time. Every one must have observed with admiration not only the rapidity of reconstruction, but the calmness with which questions of the greatest difficulty are being decided in reconstructing a republic but lately in imminent peril of disintegration. The tone of the Americans seems grander and more manly, as befits the voice of a nation which has proved itself equal to any emergency, and can therefore afford to be moderate without incurring the reproach of want of courage. "After the Storm" is written with much ability, and gives us the evidence of a trustworthy witness as to the state of feeling in the United States. Americans have now done enough to be less thin-skinned about their country. It has often been observed that Americans are as apt to fire up when anything derogatory is said about their constitution as an Englishman is at a personal remark; both from the same feeling—that the subject matter is capable of improvement. We do not think any complaint can be made of "After the Storm," as it is not written so much in a critical, as in a fairly descriptive spirit, and is the work of a sober-minded traveller, as judicious as he is interesting in his remarks. Some notion of the way in which genuine Americans keep under the raw material continually being introduced into their country by emigration, while this material is being assimilated, is shown us in the early pages of the book. This is one of the most remarkable features of the United States, that it has been able to preserve the superiority of the governing race in spite of the discordant elements which at times threaten to destroy the coherence of the mass as one people, speaking one tongue and having one code of laws. The mob are managed somehow; if in a manner a little too savouring of pistol practice, yet one suitable to the country. Speaking of a Sergeant Warren, with whom he had made acquaintance, Mr. Skinner gives us the following anecdote: "When some of them spoke rudely to the Britisher, Warren put a stop to it in the manner of—enough! ye all know of John Brent. 'Sir,' said he, addressing one who declared an inability to distinguish between a — Britisher and a — Reb., 'just you step out with me for five minutes, and I'll convince you that there is a difference, leastways in this gentleman.' The objector was silenced, and afterwards told me that Warren was a smart man. 'Means what he says, Mister! Darned if he don't.' The remark about Canada 'having to come some day' may be a more deep-rooted feeling than is imagined, and will account for the way in which the Americans have behaved towards the Fenians. The chapter on the respective merits of American

and English railways again brings out the American freedom from restraint. The train stops, &c. "By thunder," says a passenger, "if we ain't stopped; let's get out and look round a bit." This suggestion is generally acted upon. After the engine is mended up by the engineer—with the answer to the question "What's the matter?" "Oh, nothing, she's done this same afore, 'spects they'll be obliged to git regular fixed up, or there'll be a worse smash some day"—a shout is raised by the conductor, "All aboard," and the engineer goes ahead, slowly at first, that gentlemen may be able to regain their seats.

The reflections on Canada are valuable. "The danger is that the Canadians will be 'Americanized.'" "Many reasons which now exist for Canadian antipathy to Yankee-dom will diminish in strength as years go by. French *habitans* have little desire to join an English-speaking Protestant Republic; Orangemen are repelled by Fenianism; and Conservatives generally prefer the property qualification in Canada for voters to that universal suffrage so common in the States." But these parties, we are informed, will some day be outnumbered. The chapters on Canada as it is now are instructive, especially that on emigration. "Petroleum at His Head-quarters" is a wonderfully life-like description. The anecdote of the old Pennsylvanian farmer and the Yankee speculators we have seen in print before, though, perhaps, quoted from this book. Englishmen are advised to try for oil in some of the shale districts of England. There are very readable chapters on Mexico, bull fights, &c., and on the Irish Republic. We will conclude by observing that the style is particularly graphic and easy. In some passages we detect imitations of Dickens. And in page 324 there is a very good parody on the peculiar rhythmical poetry of the present day, in which its great excellence, terseness of expression, is imitated; and yet more the rhythm itself is caught to such a degree that the passage reads quite like a bit of Tennyson. "After the Storm" would be read with avidity, if it were not for the awkward fact that a storm is at this moment raging nearer home, but as there certainly will be more Transatlantic storms yet, the work ought not to be lost sight of.

JOSH BILLINGS.

Josh Billings: his Book of Sayings. With Introduction by E. P. Hingston. Library Edition, Cr. 8vo, pp. 200, 3s. 6d. Fsep. 8vo, pp. 200, 1s. (J. C. Hotten.)

WE quite agree with the remark in the introduction, "There are wit and humour, and sound sense enough in the writings of Josh Billings to warrant their being translated into good spelling; but, even as they are, they cannot be read without exciting mirth," &c., &c. The only wonder is that the translation has not been effected in the present edition. The peculiar humour of Josh Billings does not reside in cacography, which becomes troublesome if continued beyond a short aphorism or a pointed stanza. It resides rather in a way of treating serious matters without actually being profane. He is a sort of funny Puritan, leavened with good taste. Nothing but specimens can give any idea of his quality. Let us take, translated, "A short and very affecting Essay on Man":—

Man is a problem not yet solved, made out of dirt, and smells of the material. He was created a little lower than the angels, and has been getting a little lower ever since. He was given a beautiful home close to the borders of heaven, the fruit and the flower was planted for him, and the sweet waters were led along his footpath, birds sung only for him, and woman was built to make his joy complete. The lamb laid her head on the lion's bosom, and the viper knew not of his sting. The wind was tempered with soft fragrance, and all things had only the soul of innocence in them. Guile there was none, fear there was none, even hope there was none, for there

was nothing to want. This was beautiful to behold, but it didn't prove anything but the kindness of God. Could the earth be peopled? could the oceans be crossed? could the forest be chopped down? could cities be built? could anybody be made to work?—when there was nothing to hope for and nothing to want. Man was created to govern a world of ruggedness; and he couldn't do it by being as harmless as a dove; he must have a touch of a good-sized serpent in him, or he would have lived, he and his wife, growing beautiful and useless for ever in the Garden of Eden. Man never was built for the Garden of Eden; he was only put there to see its beauty, but not to enjoy it till he had earned it; not to live there until a weary round had been paced. Eden was his cradle, Eden was the play-ground of his young Adamhood, and under his vine and fig-trees was his old age to be gathered. How many of the countless millions who have gone forth from the pearly gate of the garden have ever entered again? Some few, perhaps, have got back, weary and worn, some few have got back within sight of its glory, and sleep there, but legions lay where they have fell, as far from their home as wandering feet could carry them; and man, after 5,000 years of birthright to all the glory of heaven and earth, is as much of a problem as ever. If he governs the earth, if the lightnings obey him, if art is the monarch of nature, and if even the angels are at times tempted to admire him, struggling with the serpent, is he not at this day a most magnificent failure? Can he, who has governed so much, that even angels would shudder to attack, can he govern himself? This is the problem. It is but a step from the furthest grave to the Garden of Eden, but how few take it. We all know the way back to the cradle of Eden. We all long to be there asleep, but if God don't take us in his arms, as froward children are taken, how few there will be who will ever get home. Man is the problem, God is the solution.

Josh Billings can discourse on free will as well as on original sin; but he rejoices to do so under his own heading, which is "Manifest Destiny":—

Manifest destiny is the science of going to the devil, or any other place, before you get there. I may be wrong in this sentiment, but that is the way it strikes me, and I am so put together that when anything strikes me I immediately strike back. Manifest destiny might perhaps be blocked out again as the condition that man and things find themselves in with a ring in their noses, and somebody hold of the ring. I may be wrong again, but if I am, all I have got to say is, I don't know it, and what a man don't know ain't no damage to anybody else. The true way that manifest destiny had better be set down is, the exact distance that a frog can jump down hill with a striped snake after him. I don't know but I may be wrong once more, but if the frog don't get caught, the destiny is just what he is a looking for.

When a man falls into the bottom of a well, and makes up his mind to stay there, that ain't manifest destiny any more than having your hair cut short is; but if he almost gets out and then falls down in again 16 feet deeper, and breaks off his neck twice in the same place and dies and is buried there at low water, that is manifest destiny on the square. Standing behind a bull in fly time, and getting kicked twice at one time, must feel a good deal like manifest destiny. Being about 10 seconds too late to get an express train, and then chasing the train with your wife, and an umbrella in your hands, in a hot day, and not getting as near to the train as you was when you started, looks a little like manifest destiny on a railroad track. Going into a temperance house and calling for a little old Bourbon on ice, and being told in a mild way that "the Bourbon is just out, but they have got some gin that cost 72 cents a gallon in Paris" sounds to me like the manifest destiny of most temperance houses.

My dear reader,—Don't believe in manifest destiny until you see it. There is such a thing as manifest destiny, but when it occurs it is like the number of rings on the racoon's tail, of no great use only for ornament. Man wasn't made for a machine; if he was it was a locomotive machine, and manifest destiny must get off from the track when the bell rings, or get knocked higher than the price of gold. Manifest destiny is a disease, but it is easy to heal. I have seen it in its worst stages cured by sawing a cord of dry hickory wood. I thought I had it once, it broke out in the shape of poetry. I sent a

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specimen of the disease to a magazine, the magazine man wrote me next day as follows: "Dear Sir,—You may be a dam fool, but you are no poet."

To quote any of the numerous aphorisms would be tedious. It is a book to take up a thousand times, and lay down again as many. It has been published in two forms to suit all purses. "Josh Billings" will soon become as household a word in his adopted country as "Sam Slick."

The Emphasized Liturgy: With an Introductory Essay on the Theory of Emphasis and the Intellectual and Mechanical Principles of Public Reading. By Alex. M. Bell, F.E.I.S. 12mo, pp. 140, 3s. 6d. (Hamilton.)—This is decidedly the most valuable treatise we have yet met with on the art of reading aloud. The scientific principles of all thought in language are first laid down in a very able manner, and then rules necessary for reducing theory to practical art are clearly inculcated. Many persons who speak correctly and with proper emphasis, when they attempt to read are nearly unintelligible. To read well, requires first of all intellectual ability to enable the reader to seize the point of the sentence, but, beyond this, art is required, as many persons quite equal to the discovery of the point are unable so to use their own voices as to convey the meaning to the audience. "The common error is, that no one meaning is definitely brought out, and nothing is emphatic because everything is emphatic. Tone of voice gives emphasis. The general principles of expression by tone are simply these: A monotone is reflective, a rising tone is prospective, a falling tone is retrospective." With the aid of oral instruction as to force of voice, the treatise would go far to improve the style of reading amongst aspirants for orders. Would not some sign, such as the crescendo or diminuendo in music, be available in such a work to indicate the degrees of relative force required? The hints on the mechanical principles of reading are most instructive, but we think the tables require to be orally taught, as many a reader cannot, as is well observed, discriminate when his voice rises and when it falls. Altogether the treatise is well worth the attention of clergymen, as well as of students preparing for holy orders.

The Fine Arts Quarterly Review. No. 1. New Series. Imperial 8vo. (Day & Son.)—We welcome with great satisfaction the re-appearance of this, the most gorgeous of all our quarterlies. It is illustrated more profusely than ever, and the paper and typography are delightful to behold. We rejoice, moreover, to see that the accomplished editor is a little more catholic in the choice of his staff, and that the pre-Raphaelite heresy does not stare the reader in the face from every page as formerly. A journal of this high class, in the getting up of which no expense is spared, ought to represent every opinion, and be the exponent of Art generally in the widest and broadest sense. We are glad to see that most of the articles are, as formerly, signed. This practice has its objectionable side, but when such lofty ground is taken, signatures give confidence and warrant of good faith. The contributions in the present number which will be most read are those on "Landscape Painting," by Franklin Leifchild; "Religious Painting," by M. C. H.; and the "Cartoons of Raphael" by Mr. Watkiss Lloyd. There are besides these several reviews of important books on Art; the recent acquisitions to the South Kensington Museum, and the additions to the National Gallery are noticed; and the new Graphotype process is expounded and illustrated. We cordially wish every success to *The Fine Arts Quarterly*, for we are quite sure no journal is more deserving of it.

A Painter's Camp. By Gilbert Hamerton, Author of "The Isles of Loch Awe." Second Edition, revised. Fscp. 8vo, pp. 360. (London, Macmillan and Co.)—Whatever variety of opinion may exist as to Mr. Hamerton's merits as a painter, there can only be one judgment on him as a writer and Art critic. He has been amply recognized as such on both sides of the Channel, and we congratulate him on "A Painter's Camp" having reached a second edition.

The Sham Squire; and the Informers of 1798. By William J. Fitz-Patrick, Biographer of Bishop Doyle, &c. Third Edition. Small 8vo, pp. 329. (Dublin: W. B. Kelly.)—Whoever wishes to have a correct notion of the miserable

manner in which the Irish people were governed sixty years ago will read the documentary evidence brought forward in "The Sham Squire." It is the old story, as regards Ireland, of foreign tyranny and domestic treason. Better days are surely in store both for Ireland and the Irish.

Thom's Irish Almanack and Official Directory of the United Kingdom of Great Britain and Ireland for the Year 1866 contains quite a world of information. In bulk it is almost equal to the "London Directory," and in general get-up it is decidedly superior.

The new magazine called *Nature and Art* has reached No. 2. It is most beautifully illustrated and distances, in this respect, all its rivals. When we say that the publishers are Day and Son, we account, perhaps, for the success of its coloured plates. It ought at the same time to be stated that the letterpress, including as it does, some of our most popular writers, is in every way worthy of the illustrations.

We have received *Posthumous Gleanings from a Country Rector's Study*, by the late Rev. E. Budge. Edited by the Rev. R. B. Kinsman (Rivingtons);—*The Prayer-book Interleaved*. Second Edition, revised and enlarged. (Rivingtons);—*Nature and the Bible in Agreement with the Protestant Faith*, by James Davis (Houlston and Wright);—*Bleeding and Change in Type of Diseases, being the Gulstonian Lectures for 1864*, by W. O. Markham, M.D. (Churchills);—*The Profits of Panics*, by the Author of "The Bubbles of Finance" (Sampson Low and Co.);—*The Money Market*, by Henry Noel Fearn, F.R.S. (F. Warne and Co.);—*Our Common Fruits* (F. Warne and Co.);—*Descriptive Poems*, by J. Askham (F. Warne and Co.)

PUBLICATIONS OF THE WEEK.

- ALL the Year Round. A Weekly Journal. Conducted by Charles Dickens. With which is incorporated "Household Words." Vol. 15. From January 13 to July 7, 1866. Roy 8vo, pp. 720. Office. 5s. 6d.
- ALPHA and Omega. By Merlyn Castell. Post 8vo, pp. 125. Spencer (Leicester). Simpkin. 6s.
- BEECH (Mrs. Isabella). Management of Children in Health and Sickness. (Beeton's House and Home Books.) Cr. 8vo, sd., pp. iv.—92. Ward and Lock. 1s.
- BEGGAR'S BENISON (The); or, a Hero without a Name, but with an Aim: a Clydesdale Story. Illustrated. 2 Vols. Post 8vo. Cassell. 21s.
- BRADDOCK (Miss). Aurora Floyd. Cheap Edition. Fscp. 8vo, bds. Ward and Lock. 2s.
- BUDGE (Rev. E. B.A.). Posthumous Gleanings from a Country Rector's Study. Also Essays contributed to the *Saturday Review*. Edited by the Rev. R. B. Kinsman, M.A. Post 8vo, pp. vii.—374. Rivingtons. 8s.
- BURGESS (J. T.). Elementary Gymnastics for the Young and Sedentary. With Illustrations. (Warne's Bijou Books.) 32mo, cl. ip., pp. 95. Warne. 6d.
- BURNS (Robert). The Illustrated Family Burns. With an Original Memoir. 4to. Mackenzie. 30s.
- COLQUHOUN (John). Sporting Days. Cr. 8vo, pp. viii.—255. Blackwoods. 6s.
- DE ROS (Lieut.-General Lord). Memorials of the Tower of London. With Illustrations. Cr. 8vo, pp. xxi.—298. Murray. 10s. 6d.
- ELPHINSTONE (Hon. Mountstuart). History of India. The Hindu and Mahometan Periods. 5th Edition, with Notes and Additions, by E. B. Cowell, M.A. 8vo, pp. xxxii.—790. Murray. 18s.
- ENGLISH Cyclopædia (The). Conducted by Charles Knight. Re-issue. Geography, Vol. 1. 4to. Bradbury. 10s. 6d.
- EURIPIDES (Translations from). Medea, Iphigenia in Aulis, and Iphigenia in Tauris. By J. Cartwright, M.A. Cr. 8vo. Nutt. 6s.
- FOSTER (A. F.). History of England for Schools and Families. New Edition. Fscp. 8vo. Warne. 2s.
- GALIGNANI'S New Paris Guide for 1866. 12mo, bd. Simpkin. 7s. 6d. With Plates, 10s. 6d.
- GAVAZZI (Alessandro). No Union with Rome: An Anti-Eirenicon. Being an Answer to the Reunion Scheme of Dr. Pusey. Post 8vo, pp. 308. Westerton. 6s.
- GRANDY (R. E.). Standard Guide for the Corn Merchant, the Miller, and the Baker. 12mo, pp. iv.—43. McGlashan and Gill (Dublin). 2s.
- GRIFFITH (G.). The Two Houses: a Staffordshire Tragedy. 8vo, cl. ip. Broomhall (Stourbridge). Whittaker. 2s. 6d.
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SCIENCE.

GEOGRAPHICAL ZOOLOGY.

Geographical Distribution of Mammals. By Andrew Murray, F.R.S. (Day and Son, Limited.)

THE geographical distribution of plants and animals, both at this day and in past geological epochs, is a branch of study which has suddenly risen into the highest importance, since it was perceived what a momentous bearing it has upon the origin and the succession of life upon our globe. If it shall ever be possible for us to arrive at anything like a moderately well-founded opinion or theory as to the origin, or the necessary conditions for the first appearance, of our own species, it can only be after a searching analysis into the time and manner when the species most nearly related to our own, and the nutrition most necessary for the development and sustentation of the human organization, began to spread over those portions of the earth which we now inhabit. However incomplete in itself our present knowledge on these subjects may be, the amount of information which has been, accumulated has rendered it very desirable

that it should be classified and displayed, so that some general and connected view of the facts, and of their bearing on each other, may be obtained. Mr. Andrew Murray has undertaken this task, and we have here the first instalment, in the shape of a magnificent quarto of nearly 500 pages, and illustrated with more than a hundred maps, upon "The Geographical Distribution of Mammals." Six maps of the world, extending over the double-page, arrest our attention on opening the book. They give us an idea of the vast and fluctuating area over which the investigations whose results are chronicled have been spread. The first shows what would be the configuration of the dry land if it were everywhere raised 600 feet. The second what would be the probable coast line in the event of a similar depression. This must obviously be much less accurate; the lowest altitudes of the earth are little known; and a most minute survey would be necessary to ascertain the insular specks of emergence which such a depression would leave on the borders of every coast. The third shows the parts of the earth which were probably under water at the time of the glacial epoch. The fourth, the localities where glacier action, or remains of the drift or boulder clay, have been remarked. The fifth shows the lands which are supposed to be now rising and those now sinking. The sixth indicates the positions of the different Sargassum Seas. The remaining maps vary in size, but all represent the earth on Mercator's projection. Each group or species of mammals has one or more attached to its description; and the localities in which the living or extinct species are or have been found are indicated by appropriate bands of different colours. The flood of light which this arrangement throws in a moment upon some ingenious theory is most instructive. Take Map xii., "Places where remains of Carnivora have been observed in formations prior to Glacial Epoch." Three patches alone are visible on this map—viz., one in the centre of North America, another covering the greater part of Central and Southern Europe, and a third in the North-West of India. We are not to suppose that these spots always indicate the exact localities where these animals flourished. On the contrary, the remains have, both in India and America, been preserved in what must have been lakes or the estuaries of vast miocene rivers; and the creatures to whom these bones belonged may have lived hundreds of miles up the country which is now submerged beneath the Atlantic or the Indian Ocean. That the habitat of the American species was either below or in the direction of what is now the Atlantic is undoubted. But a curious question, and one on which much depends, hangs upon the point from which side the Carnivores, whose remains are found in such numbers at what was then the bottom of the Sevalik Sea, tumbled in. Mr. Murray fairly enough concludes from that side on which we still find remains of the same or similar species belonging to an anterior period, and who probably were the stock out of which the type in question was developed. Now this is the north. The other shore of the Sevalik Sea must have communicated with what is now Africa, and in Africa we find no remains of Carnivores, but we have ample evidence that previous to the Glacial Epoch the antelopes, at least, amongst the Ruminants, had marked Africa for their own.

Nor has a single, well-determined, and undisputed instance of fossil remains of antelopes been found in the Northern Hemisphere. We have thus apparently the singular fact rendered probable that Africa, at least, was free from carnivorous animals until after the glacial epoch, and that the herds of Ruminants and Pachyderms enjoyed an Elysian existence—a sort of Garden of Eden, into which death never penetrated; at least in the guise which they now most dread. I have heard very excellent discourses on the beauty of the balance of life, whereby the excessive increase of one animal is kept within bounds by the destructive instincts of another; and very generally the Lion and the Ruminant wound up and gave point to the argu-

ment. But we see that no such compensation balance is now needed or used in South America, where the herds of cattle and horses roam unchecked by the puma or the wolf, which are unequal to the task of subduing them.

We must not let this interesting discovery of the lion lying side by side along the map of the Miocene World with the antelope without injuring him lead us into any hasty generalization. The Ruminants of North America enjoyed during the same period no such exemption from grim death. Map xlii. displays the same portion on which the Carnivores flourished thickly inhabited by horses and asses. Map xl. shows the camel has left traces there also. Map xxxvii. destroys our dreams of the Paradisiacal state of the Miocene lamb. Its Ovidæ were doubtless the prey of their contemporaries both in America and India.

Forty-one chapters, except the first preliminary ones, to which we shall afterwards revert, are occupied with these monographs upon the range and local position of the extinct and living mammals. The author's own views on many points are interspersed with a vast accumulation of facts and authorities, which he has disposed in a manner easy of reference, and interesting both to the scientific and general reader. It is not long (see READER, April 28th) since we quoted Mr. Boyd Dawkins as going further even than Professor Owen's latest opinion that the *Felis leo* was undoubtedly a lion. Mr. Murray shows that the balance of authority has not yet quite kicked the beam. Dr. Giebel in 1859 is very positive that Professor Owen was right at first, and our author's peculiar study of distribution seems to incline him that way:—

The range of the living tiger is certainly more akin to that of the deceased animal, than is that of the lion. Notwithstanding this, it has even been doubted whether it might not have been a leopard, a spotted cat instead of a striped one. Shorter processes of the maxillary bones are present in the skull of the jaguar as well as the tiger, but Cuvier speaks of the Cave species resembling the leopard more than the tiger or lion, in the uniform and gentle curve of the skull.

A gradual amelioration, that is, an increase in the average temperature of the climate of Europe, has been going on ever since the commencement of the glacial epoch, according to our author, and he instances "that conquering power has gone forth from the Greeks and Romans;" but he forgets that the energies of the Northern nations must have suffered relatively; and that Seneca admits even in his own day that the Germans might easily overwhelm the Empire if they were as well disciplined as the legions. Mr. Murray is of opinion that we have not yet reached the close of the glacial epoch, and may therefore predict the nature of the changes life is likely to pass through during the coming ages. For it is his theory that alteration in condition brings about change in form; and that in a few hundred or thousand years. He abandons to a certain extent the theory of specific centres of creation, and partially, though perhaps rather in appearance than reality, sides with Agassiz in his theory of a multiple origin of species. For whilst he thinks that species have been developed simultaneously over a large area, he does not admit that exactly similar individuals or pairs could have come into being at different points of the globe. Nor does he think the area in which species, whether fossil or living, are found at all fixes their original bounds. On the contrary, wherever varieties occur, they are a proof of emigration from the original field into one not perhaps materially different in conditions, though possibly widely separated from it geographically. The people of the United States are an instance. Geology also shows that the original habitat of the Carnivora was in the north. As the glacial ice advanced southwards they would be squeezed down, undergoing changes which would eventually turn them into what we call new species, and locate them in new habitats altogether. Thus take the genealogy of the lion:—

At the commencement of the cold, the Machairodus, or some other Carnivore, has been changed into the Cave lion; and when mild weather began to return, the Cave lion became the common lion. At this time life had not returned to Europe, and the specific centre of the new animal was probably in Asia; thence it would spread into Europe and Africa.

The fact that the tiger begins to appear where the lion begins to die out, leads Mr. Murray to deny that this results from the "struggle for life." He asks—

How did the struggle for life ever allow a second species to get to such a head as to need to be driven out? Being allied, the one species was most probably derived from the other. How came the weak one ever to get a footing at all? The hypothesis by which I have attempted to explain the stability of established species, the origin of new species, and the existence of special faunas in special cases in many provinces, explains this.

Though from a comparison of Maps xiii. and xiv., and recollecting that Map xii. showed no Miocene lion in Africa, or even in Arabia, it would seem that the tiger has proved the stronger, and occupied the country which once belonged, or would in its absence have passed to the lion, who may perhaps be the tiger modified; still, it is remarkable that this animal, though found at the southernmost point of India, has never reached Ceylon, and though found in Sumatra and Java is not so in Borneo. The absence of all overweening generalizations, which is so valuable a distinction throughout this book, has prevented Mr. Murray seeking to explain the two cases by the same theory. Sumatra and Java were, no doubt, separated from the mainland by the same geological events as Borneo. Something special must therefore have affected the latter—

If we imagine the island to have sunk so much as to have become an impassable morass, covered with an impenetrable thicket of trees growing in the mud, such as is to be seen now in some parts of the New Guinea Coast, as described by Mr. Earl, it would perhaps explain the absence of large animals. . . . An examination of the mammalian fauna of Borneo, shows that, with very few exceptions, the mammals are either arboreal in their habits, or amphibious, or flying, or in some way or other capable of subsisting in a half-drowned land.

Take another instance of cautious argument:—

The advocates of the formation of species by hybridization could not find a more satisfactory illustration [than that of the dog-hyæna] for their purpose; while those who, like myself, do not admit hybridization as a direct instrument in the formation of species, will see in this animal one of those instances which are occasionally, but not often, to be met with, where a species seems to stand exactly midway between animals which are still existing. It does not follow that it is the descendant of the one, and the parent of the others. The homologies of an allied species may be reproduced along with the qualities of the direct progenitors of the species.

And after recognizing the extreme difficulty of conceiving the mode of the origin of marine mammals, he will only say that as the exceptional form should be derived from the normal rather than the reverse, so we should look rather for indications of the descent of the aquatic from the terrestrials; "although if pressed for a reason why one should be considered more normal than the other, I must candidly confess that I have none to give, except the very lame one that now the one is more numerous in species than the other." These observations head the monograph on "Seals." At present no undoubted remains of seals are earlier than in miocene deposits. Which terrestrials are most capable of bringing up an aquatic family? The Otter and the Polar Bear. Now "size is an element in determining affinities, which is, I think, scarcely sufficiently recognized. A mouse with the form and structure of an elephant would be an anomaly in nature. The machinery would not be adapted to the work to be done. Bulk, therefore, may fairly be admitted to go for something in weighing affinities. None but the bear approaches

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the seal." But the seal has a longer pedigree. The bear is a Pliocene family. Perhaps, therefore, the supposed ancestor was another animal allied to both, such as the Amphicyon. The fact of the seal being found in fresh-water lakes, as well as in the sea, leads to much speculation on the original extent of the Arctic Ocean. According to Mr. Murray, Lake Baikal and the Caspian must have been among its bays; and when they were isolated by an elevation of the land, the former having an outlet, subject to a constant pouring of fresh water from streams and rivers, gradually became fresh. But the process has been spread over so immense a period of time, that the seal remains the same. "Had the change been more rapid, according to my view, we should have had a new species instead of merely the old one."

It has been thought by distinguished authorities that the Mammoth was an instance, the solitary instance, of a mammal living in two epochs. But Mr. Murray deprives him of his unique epithet "Dicyclotherian." His bones may have been found on the shores of the Arctic Sea, and in the Valley of Cashmere, but it does not follow that he really divided the year between summer and winter abodes, nor that he wore now the coat of which a specimen still remains, and now was bare. He was always a circum-polar being, pushed before the glacial ice southwards, and clinging to its fringes as it retreated northwards.

Elephants existed in the miocene time, but polar elephants were not known until the glacial epoch brought them into existence. Their cycle was the glacial epoch. So far from their constitution being flexible and capable of adaptation to great differences of climate, I imagine it to have been the very reverse. They came in with the extreme cold, and have gone out with the extreme cold. They did not, "by a miracle of Providence," survive the two epochs.

On the principles of classification pursued in the book we cannot do more than touch. That of Owen is to a great extent followed, but the exceptions are by no means inconsiderable, and we observe that classes, orders, and families, are mere words for Mr. Murray.

Agassiz believes in the existence of all these subdivisions in nature. I do not. I see that organized beings exist in groups, but I see no two groups bearing the same rank, and no two equally well defined. It appears to me, therefore, that the practice of naturalists, of which Agassiz complains, of using the terms class, order, and family, loosely, and often interchangeably or indiscriminately, is quite natural.

The forty-second chapter gives a summary of the way in which the globe has been divided by different authorities into different zoological and botanical regions. In the forty-third, the existing mammalian fauna are divided into four great primary provinces and some minor subdivisions, illustrated by the maps. In both, the Europeo-Asiatic province includes all North America down to the 50th parallel. This occasions a little confusion on first comparing the two maps with the decided statement in the text that "the whole of the American Continent both north and south belongs to one zoological region." The difficulty is one which could not have been got over by any arrangement of colours. The connexion of Greenland with Europe and Siberia with the extreme north-west of America has been of such a varying character that a series of maps would be necessary to exhibit the changes of that terrestrial region alone. Judged by their earlier life (plants and insects), they should go along with Europe; looking to their birds and mammals, to America. The Europeo-Asiatic admixture perceptible to the latter being engrafted upon the genuine stocks. The other two regions are the "Africano-Indian" and the "Australian." With this chapter the book ends, but we must notice the appendix, containing the Classification of Mammals proposed by different authors, and the same of the Insectivora. Then follows a "Synonymic List of Species of Mammalia and their Localities." This extends over more than forty quarto pages, and the

works of almost every writer on the subject have been ransacked to complete it. The importance of this compilation will be apparent at once, and is a proof how the greatest industry and most laborious accumulation of details is quite compatible in the same person with all that is refined and comprehensive in speculation. It includes fossil as well as recent species. A second list of nearly the same extent follows of "Mammals of Special Districts." This is the complement of the former. There are a few more tables; and finally, a letter from Mr. Palgrave, dated Cairo, 14th May, 1866, on the zoology and physical characteristics of South Arabia, which, like Mr. Murray, he is inclined to class far more with Africa than with Asia.

Mr. Murray takes his leave with this sentence:—

With my views on the submerged Pacific Continent; on the separation of the Indian region from the Australian; the divisions of Australia; the submerged Africano-Indian Continent; the former junction of Madagascar to Africa; the possible existence of land between South-West Australia and the Cape of Good Hope, the Miocene Atlantic, and kindred tropics, the reader who has followed me thus far is familiar.

To give any idea of his views upon all these subjects would clearly be impossible here; but in the preliminary chapters there is contained a new theory of the Origin of Species, and we must gratify the curiosity of our readers with a short account of it. That species are not produced by independent creation, but that, under the operation of a general law, the germs of organisms produce new forms different from themselves, under particular circumstances, has become an axiom with scientific writers. The theory of "natural selection" and the "struggle for life" have been elevated by Mr. Darwin into *vera causa* of the appearance and development of new species. We have always considered "natural selection" as too inadequate a power to effect the results which have to be accounted for. It appears to us an ingenious and, in certain cases, probably a correct reason for explaining away some of the difficulties which stand in the way of the development hypothesis. At the same time it was supported by Mr. Darwin with such ability, and so great an agglomeration of facts so disposed as to bear upon the desired conclusion in the most effective manner, that it was clear, however unconvinced might be the minds of many thinkers that the "origin of species" had been really discovered, that until some more comprehensive explanation had been afforded of the phenomenon, "natural selection" would be accepted as the watch-word of those who consider that all phenomena are evolved by natural law.

The absence of transitional forms was always an objection. No one has been more strongly impressed with this than Mr. Murray. But he considers that he has found an instance in which a transition is going on before our eyes:—

We have seen a race of man formed under our own eyes, the Anglo- or rather the Europeo-American nation, as distinct and well marked a race as any other; and yet the change has been effected over the whole of the United States without any transition men having ever been observed; and what is still more extraordinary, it has been effected over the whole of the region where it occurs at the same time.

The deduction he makes is that "Nature can produce a new type without our being able to see the marks of transition, and that she can alter a whole race simultaneously without its passing through the phase of development from an individual in whom the entire change was first perfected." Mr. Murray thus sums up the chief differences between his views and those of Mr. Darwin:—

He believes that in all organic beings a certain degree of change is unintermittingly going on; and that, from that variation and selection, through the struggle for life, new species are being incessantly developed. He makes ample provision for instability; none for stability. I believe that the gates are habi-

tually shut, but that they are always ready to be opened to a greater or less width at a touch of the key, and that that key is CHANGE in the conditions under which species live. It does not matter what the change is, nor in what direction it takes place. It has no relation to adaptation nor teleological purposes, it may be for their comfort or discomfort; for their benefit or the reverse; its bearing on their organization is a matter of indifference; all that is wanted is change of some kind or other to ruffle the pool.

The law which, on the other hand, secures the stability of species is *Inertia*. Change of circumstances produces variation. Continued sameness will keep species unaltered in perpetuity. It is not the desire within, excited by necessity, but the forces without, acting upon large masses at once, which have covered the diversified surface of our planet with a similarly diversified flora and fauna. This hypothesis is quite in accordance with what we know of the history of species during past geological epochs. When the temperature and climate in every country on the face of the earth were uniform, the number and variety of forms of life would be more uniform also. If our globe was once a ball of incandescent matter, its cooling down was gradual, and the first forms of life would vary but little. Special provinces or fauna could scarcely exist. But at the time of the glacial epoch a universal change must have taken place in everything that was exposed to cold. Now there are no remains of any boreal animal to be found in any strata anterior to that epoch. And this is equally true of plants. "It is essential for me to dispute the proposition that arctic types existed previous to the glacial epoch. If that be true, my theory would be worthless, and I must give it up." Firmly believing that all species have been derived from their predecessors on the globe by generation and natural descent, Mr. Murray infers that the glacial cold so altered the conditions of life over the greater part of the earth that after that epoch began, the appearance of new species became a comparatively common event. This, however, was not the only cause. The subsidence and elevation of continents also, by compelling the inhabitants to migrate into regions widely separated from their parent country, contributed to the same result. Moreover, "the theory that change in the forms of organic life is the result of alteration in the physical condition of the earth, requires that some important change should have occurred at the close of the Secondary and commencement of the Tertiary epoch; for at that time there was a great start given to the development of species, and new forms and new types came then into being." This is to be looked for in the gradual transference of dry land from the Southern to the Northern Hemisphere. This leads to the consideration of the "Miocene Atlantis," and the past geography of the globe. The fact of vast geological mutations is demonstrated and enforced by the most delicate analysis of the knowledge we possess of the Tertiary flora and fauna.

The actual appearance of a new species of the larger animals is nowhere directly explained. When the absence of all transitional forms is insisted upon, we must remember this remark applies only to the hard parts of the body. Thus Mr. Murray, after dividing mankind into the two great divisions of blacks and whites, admits that each is divisible again into an infinitude of smaller sections. Starting with the Esquimaux, he asserts that the Chinooks cannot be distinguished from them; and "the tribes next to them on the south again pass insensibly into the red-skinned tribes of middle North America." Then he will have it that "the Esquimaux amalgamate with the Samoiëdes and Tunguseans of North-Eastern Asia, who in their turn pass into the Mongolians on the south." After this, the conclusion is easy that the Englishman is no way of a distinct race from the American aborigines or even from the Malay. The black races consist of the Papuans, perhaps the Hotten-

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tots, and the hill tribes of India. Are these two races to be accounted different species, or merely tribal varieties? Mr. Murray rather evades a direct answer:—

The difficulty of separating species increases as we ascend the scale of life; and reaches its culminating point in man. It would appear as if the action of the developing power had, in its long course, undergone some change, not in nature but in degree, some modification such as we see typified in the actual growth and life of man and his fellow-creatures; its steps were wider apart and more decided in earlier days, and its ideas, so to speak, simpler and less matured; in age its action has become more precise and more important, and as the creatures developed have acquired a higher and higher grade, the steps in advance have been shorter and more frequent. It may be, for example, that had the influence of development, or creation, to which we owe the two races of man, or any of the doubtful species of monkey, been exercised on less highly organized animals, the product would have been more absolutely distinct species. I incline to regard the two races not as the result merely of ordinary generation or variation, but of the action of the law of development through which new species are derived; and I account for the product being something less than what would be reckoned a species in other orders by the high organization of the creature developed.

Then he discusses the relative antiquity of the two races; which is the parent, which the offspring? The answer to this question is connected with the alternations of elevation and subsidence he had previously discussed. "While the great continent of the Southern Hemisphere was in its prime and peopled by the black race, the Northern continents were almost wholly under water, and possibly without human inhabitants." The deduction is obvious, though our author hesitates to express it in so many words. Under this reserve must be, we think, concealed some more decided opinion. We will give our own idea of what Mr. Murray wishes to insinuate.

First, conditions of life ultimately change one species into another; secondly, this change is effected without producing any transitional forms in the osseous skeleton, so as to leave any enduring trace of the operation; thirdly, such changes take place over large areas, and in large numbers of individuals, suddenly and simultaneously, or nearly so; fourthly, in man we have ocular evidence of a change of race going on, but not of a change of species. The European-American is already a different race, but his osseous structure in no way differs from our own; inter-marriage presents no difficulties, we see no indications of his becoming possessed of fresh organs or novel faculties. He is what we call a variety, which may even be less perennial than the original stock. In a lower animal we should have had a new species; in man, we have only this external change. An instance has occurred before, when the black race, through the subsidence of the original Indian Continent, was pushed on to the gradually-rising soil of South America, and thence by a series of geological and climatal mutations up through that continent to Europe and Asia, to meet in the south its own immensely-distant cousins, and drive them to the hill-tops of India or extirpate them in the isolated spots of Van Dieman's Land and the Islands of Polynesia.

So far we merely state our author's expressed views. But if we go to this length why not go further. The idea that the developing power is in any way less energetic than formerly rests on no solid foundation. All we can say is, we have never seen it actually at work. If no forms transitional in their osseous structure between allied species are to be found, and if none ever existed, and if in the higher animals there is but one method of descent, it is clear that change in the conditions, and change in the external peculiarities indicative of the silent progress of organic change having gone on for a short or long period of time,—such a change as since the appearance of the Black Race has been going on in the constitution of man—we

may expect to see suddenly the offspring of some human race changed in a single generation. That is, the children or grandchildren of the present Americans may come into being in the natural way, but with all the characteristics of a New Species, the Successor of Man, as he is of the Ape. Such a crucial instance would no doubt be hailed by Mr. Murray as a proof of his theory. But we are by no means so sure that it would not be equally acceptable to Mr. Darwin. The difference between the two seems to us easily reconciled. Mr. Darwin believes in ceaseless change. Mr. Murray in sudden unprepared leaps induced by great climatal alterations. The view we take is partially that of both. We believe in a ceaseless change of the soft parts, the myology, and above all in the brain of all organized beings. And we agree with Mr. Murray that such change is due to changed conditions of life. He seems to think these last changes are not always in operation. We feel sure they are; and as he thinks the glacial epoch is still going on, and the temperature of Europe improving, we are somewhat surprised at his idea of the perpetual stability of the condition of European life. These changes, however, make no appreciable—very possibly they do make some—difference in the osseous structure of man, but they are constantly preparing the way for it. When the cumulative power of these changes which may be only in millenniums in the higher animals, has reached the proper point, or when their influence is impregnated, as it were, and vivified by some great geographical or climatal alteration, then we may be changed "in the twinkling of an eye." Side by side with his cousins and ancestors, the new Being may walk the earth. It does not follow that his faculties or powers would be so decidedly superior to our own as to ensure our speedy extinction. Indeed, such an apprehension might lead to the opposite result. He would be mortal and vulnerable. Were he not at one and the same time the son, the brother, and the friend of his predecessor, could he maintain his ground? Perhaps, indeed, he might in America, especially as on the hypothesis he would appear in large numbers at once. Now the skeletons of such a creature might show so decided a difference in structure, as at once to give him his place as a different species from ours. And they would lie side by side with ours, without any intermediate or transitional form. But who would suppose that no internal and invisible changes in our own race had not preceded this final metamorphosis? It is on this point, therefore, that we insist. Because we can only see variations of complexion and apparently insignificant differences, we must not conclude that nothing of more consequence is going on in the laboratory of our frames. For example, if the new being is to have a greatly enlarged and sound brain, or six fingers on every hand, we are not to suppose it necessary that the brain of each generation for centuries should show traces of gradual development; or that, because we feel the necessity of being more clever, we should, on the Darwinian theory, gradually become so; or that a sixth projection from our arms should in the course of ages gradually develop into a finger. The unseen organization of nerves and of "life" may despise such attempts and "failures." When the moment for action is come, and the preparation is complete by the reciprocal influence of external and internal agencies, then, in the ordinary course of generation, we may hand the torch to our descendant.

Such a theory explains all the phenomena; but what evidence have we of the possibility of like suddenly producing unlike? None; but a very remarkable analogy to what such an event would be has been provided beforehand. Dr. Babbage's machine can put upon paper a series of terms or arithmetical numbers of any kind whatever, following any desired law. The parallel to this would be a law of nature providing for the continuance

of species by generation, but providing for no development of any new form. It can also provide for a violation of the law, and at some term, millions upon millions of times distant, substitute a different number following other law, and this new law may be directed without any interference after the machine has originally begun to be observed for one, or any number of turns of the machine. Even this, however, is not quite enough. At last, says Mr. Murray:—

I asked the question whether the Doctor could so set the machine that it should go on producing a series of numbers until a certain concurrence of circumstances should take place, the time when such concurrence would or could take place not being known to him, and that then, and not till then, the alteration of the law should take place. The Doctor said "Certainly. I can give the machine an order to go on producing a series of numbers until the last, and the third last, and the fifth last, or any other combination, shall all be the same figure, or shall be some combination of figures—all threes, for example, or all fives, or two fours and one five, and then the new law shall come into operation. I cannot tell when that may happen, and do not know whether it may ever happen; but whenever it does happen, be it soon or be it late, the new law will immediately come into operation."

Here is the exact parallel. We shall leave it to make its own impression on the mind of the reader.

We hope Mr. Murray will issue a popular edition of the speculations contained in this volume, whose size and expense place it beyond ordinary reach. For a long time it must continue to be the leading authority on the subjects it treats of. We have only given slight indications of its value. The series it inaugurates seems almost beyond the faculties of one man. Our thoughts are widened by its perusal to an almost inconceivable extent. The picture of the earth swelling and subsiding, its continents now rising in the south, now sinking in the north, its parasites clinging to the surface of dry land, and altering their shape and character as they are driven by slow degrees over every portion of the globe; the idea that all living things are literally "of one blood," and constantly survive in the persons of descendants, who may even inhabit a different element, can be appreciated only by the worshippers of Science. Verily, they will have their reward. Their position is a proud one. Placed, as Carlyle would say, "for a day in the conflux of eternities," they are the first to perceive the true connexion between the past, the present, and the future. The disappearance of the very continents we tread will be hailed by them as earnest of the advent of still superior forms of life; and though it be the province of religion to teach us both our own insignificance and at the same time our individual importance, we doubt if it can do so more effectually than the reflection that one of us can reconstruct those configurations of the solid earth which have long ceased to exist, and compress the history of countless forms of organic life which no man has ever seen within the compass of a pair of boards.

SODIUM AND POTASSIUM SALTS.

TWO years since MM. Bernard and Grandea communicated to the French Academy the results of their researches on the action of sodium and potassium salts on the animal economy. Previously, the physiological action of these bodies had been regarded as identical, the salts of potassium being somewhat more powerful, and this view had led to the therapeutic employment of these two classes of salts in the same manner under the most varied pathological circumstances. The investigations of these physiologists, however, furnished some very remarkable facts. Salts of potassium injected into the jugular vein of warm-blooded animals are eminently poisonous in their effects; death ensued so rapidly as scarcely to allow time enough for the complete injection of the solution. One-fifth of a gramme sufficed to kill a rabbit, one gramme of potassium salt to cause the death of a dog. Sodium salts, on the other hand, could be introduced into the circulation without

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injurious results; doses of even three times the above strength only produced a general depression, but did not prove fatal. They likewise found that death, when produced by potassium salts, did not result from asphyxia, dissection showing the lungs and heart to be in their normal condition. These results by no means diminish in interest when the constitution of the blood is considered, it being well known that the blood corpuscles are pre-eminently rich in potassium salts, whilst those of sodium are mostly found in the serum. The variation in the amounts of these two metals in the blood seems to be connected with certain forms of disease. According to Schmidt's analyses, cholera and typhoid affections are attended by a considerable increase of potash in the serum, derived from the corpuscles, and Grandeau has supposed that the great change which the blood undergoes in cases of cholera may be connected with an excess of this metal in the system. Garrod's observations, moreover, have led him to attribute scorbutic affections to a deficiency of potassium compounds, and experience has shown that the employment of potassium salts of vegetable acids has yielded good results in cases of this disease. It appears, therefore, that when the amount of potash in the blood exceeds a certain maximum and falls below a given minimum, that pathological phenomena display themselves; or, if these chemical changes be regarded as only of a secondary nature, that side by side with certain pathological conditions a variation in the amount of potassium in the blood shows itself. Nothing similar in this respect has been noticed in the case of sodium salts. In pursuance of this line of study, Dr. Guttman, a physician in Berlin, has examined the questions, whether all salts of potassium are alike in their action, and whether their effect is the same when introduced into the system by the stomach, and when injected. His investigations, which have lately been published, are summed up in the following facts: The salts of potassium are one and all equally intensely poisonous, carbonate of potassium causing death in the same time as an equal dose of saltpetre; a few grains injected into the veins of a rabbit kills the animal immediately. The introduction of potash salts into the stomach proves fatal after the lapse of some hours, and it is necessary to administer them in somewhat stronger doses; one-fifth of a gramme suffices to kill a frog, and the phenomena observed are the same as those noticed by the injection of these compounds under the skin. The action is in each case upon the heart, reducing the number and weakening the energy of its contractions. Small doses frequently repeated reduce its activity, and eventually cause death; their effect is accumulative,—their sum, in other words, need not exceed the amount of one dose that would be fatal in its action. A considerable reduction of the temperature of the body ensues, and this effect outlasts that which the potash salts produce on the heart. No change was noticed, either in the blood corpuscles or in the muscular fibres, by means of the microscope after death. Salts of sodium, when given in doses of the same strength as those of potassium, produced no change; when from two to three times the amount, a transient effect was observed; and from still larger quantities death ensued. The phenomena attending death from sodium salts are quite different from those remarked in cases of potassium poisoning, great muscular debility being the most striking symptom. The heart is not affected; even nitrate of soda does not change the number or energy of its contractions. No reduction of temperature is observed by the administration of sodium salts, including the nitrate, in doses five times the strength of those of potassium. A difference in the action of these two classes of salts on the heart was noticed by Blake in 1839. An account of Dr. Guttman's experiments of this subject will be found in the *Berliner Klinischer Wochenschrift*, No. 34, 1865, and Virchow's *Archiv* for March, 1866.

THE NEEDLE GUN.

THE invention of the needle gun has been claimed by the Prussians, the French, and the Belgians. According to the Prussians, Nicholas Dreyse, proprietor of large establishments of firearms at Sommerda, a small town near Erfurt, presented this gun to the King in 1844, and some years after it was introduced into the regiments of the Guard, and for twelve years it has been in use in the whole army (infantry, cavalry, and engineers). In 1848, when the

Berlinese attacked the arsenal, they managed to get hold of a dozen of these guns, and in 1850 one of these very guns is said to have been exhibited at Paris at the shop of a marchand d'armes. In 1849 the needle gun was used in the Grand Duchy of Baden, where it made great havoc among the ranks of the insurgents. Others attribute the invention to a M. Descoutures, an old member of the Polytechnic, and brother of M. Descoutures, Advocate General of the Court of Paris. It is said that M. Descoutures presented this gun to the Emperor, who was struck with its advantages, and charged Colonel, now General Favé, to make experiments; and that the same having proved successful, the Emperor placed it in the special armoury, and even proposed to give it the name of *Fusil Napoléon*. The first objections to its employment were made by the Minister of War. The commissions and sub-commissions formed to examine it agreed in the advantage which it possessed in point of quickness, but at the same time reported that the rapidity of the firing heated the gun, and soiled the breech. Their principal objections, however, were: 1. That the weakness of the butt end was injurious to the handling of the bayonet. 2. The rapidity of the fire rendered the carriage of cartridges difficult both for the soldier and for the ammunition waggon. In consequence of these objections M. Descoutures is said to have carried the invention to Prussia, where it was, with some improvements, adopted. A writer in one of the Belgian papers says: "All the world knows the skilful gun manufacturer, M. Montigny, whose magnificent collection of arms are displayed in the Passage St. Hubert, at Brussels. He is the son and the fellow-labourer of the true inventor of the system which bears his name, a system which is the base of all breech-loading arms. There were at one time several sorts of breech-loading needle guns, but of all these the essential point, that upon which the invention is based, is the ignition of the cartridge by the prick of a needle, and this discovery is neither French nor Prussian, but is due to the celebrated gun manufacturer, Joseph Montigny, who dwelt in Brussels from 1818 to 1835, and who, in 1832, invented the first breech-loading gun ignited by a needle. Montigny did not stop here. He likewise invented a breech-loading cannon, to which he also applied his system of ignition by the needle. His invention was submitted to the Belgian Government, who, however, refused to entertain it. In 1834 the Czar proposed to Montigny to proceed to St. Petersburg, in order to make a trial of his system of *bouches à feu*. He accordingly set out in 1835, and constructed at the arsenal at St. Petersburg some 24, 18, 12, and 6-pounders, and howitzers of ten cwt., all of which were breech-loaders, and ignited by a needle. The trials were very successful, but the heads of the artillery department were also obstinate, and imbued with old and false ideas, and Montigny was so disappointed that he died of grief in 1845." The needle gun is called in German *Zündnagelgewehr*. The cartridge is composed of two parts—namely, the charge of powder with the conical ball, and the *Zündspiegel*, a little piece of card with two cavities, in the middle of which is the tinder, called the *Zündpille*. Whoever may have been the original inventor of the needle gun, there can be little doubt that Herr Dreyse invented the cartridge now used by the Prussians.

THE ARCHÆOLOGICAL CONGRESS.

ON Tuesday last the first meeting of the annual congress of the Archæological Institute of Great Britain and Ireland was held at the Guildhall, which had been kindly placed at the disposal of the committee by the corporation of the City. The Lord Mayor, who was attended by the other civic authorities in their robes of office, presided, and was supported by the Marquis Camden, president of the society, Lord Talbot de Malahide, the Lord Bishop of Oxford, Sir John Lubbock, Sir J. B. Boileau, Mr. A. J. B. Beresford Hope, M. P., Mr. Tite, M. P., Rev. M. Hill, Rev. J. Lee Warner, and many others interested in archæological research. The Lord Mayor, in opening the proceedings, warmly welcomed the noble president of the institute and all who were seeking to extend its advantages and promote its welfare. The society, he said, had now attained its majority, having been established for 21 years, during which time many of the noblest and most ancient churches, towers, and other edifices of antiquity in the provinces had been explored by its members. It had now returned to hold its congress in the parent city, and he assured all present that the corporation would not be reluctant to co-operate with them in their endeavours to extend

the reverence for the architecture of the past, and to raise their institute to a high point of efficiency and development. The Marquis Camden, in the name of the society, returned his grateful thanks to the Lord Mayor for the warm welcome he had extended to himself and all others who had attended the first meeting of the congress. He regretted that engagements in other places had prevented his Royal Highness the Prince of Wales, who was patron and hon. president of the institute, from honouring the congress with his presence, but he was sure that his Royal Highness wished that every success would follow their deliberations and researches. Mr. Tite, M. P., also addressed the meeting, and remarked in the course of his speech that it was often objected that the Archæological Institute, and other societies established for similar purposes, had no practical use. He believed that he could not find a more appropriate space than the Guildhall to show the utility of the study of ancient and mediæval architecture, for, whereas Sir Christopher Wren had erected a plaster ceiling over that beautiful old structure, the design of the fine old roof which now adorned it was attributable mainly to the researches of the lovers of the art of former periods of our history. Mr. Beresford Hope, M. P., and the Bishop of Oxford also briefly addressed the congress, and a vote of thanks having been accorded to the Lord Mayor, the majority of the assembly visited the crypt of the Guildhall, and also the library, where many of the old charters and MSS. of the corporation were shown. Among these is an indenture of which the renewal is in the British Museum, to which is appended an autograph signature of Shakespeare. Later in the afternoon the congress adjourned to the church of St. Bartholomew, Smithfield, where a discourse on the architecture of this interesting old edifice was delivered by Mr. Tite, M. P. The party then proceeded to the church of St. Helen's, Bishopsgate, from which a further progress was made to the hall of the Carpenters' Company, where portions of the old Roman wall adjacent were explored. In the evening a *soirée* was given at the Deanery, Westminster, by the Very Rev. the Dean, at which the remains of the Abbatial buildings, the College-hall, and the Jerusalem Chamber were thrown open, and several of the monuments of the Dean and Chapter exhibited. By the courtesy of the Lords of the Committee of Council on Education and of the Board and proprietors of the Royal Institution, the theatres of the Museum of Geology in Jermyn-street, and of the Royal Institution in Albemarle-street, have been placed at the disposal of the congress for the reading of papers in the various sections. The following are the titles of the sections in which addresses will be delivered, with the names of their presidents respectively: Primæval Antiquities, Sir John Lubbock, F.R.S.; Antiquities, Mr. Samuel Birch, LL.D., F.S.A.; Architecture, Mr. A. J. B. Beresford Hope, LL.D., M. P.; History, Very Rev. Arthur P. Stanley, D.D., F.S.A., Dean of Westminster.

On Wednesday the business of the society was resumed in the theatre of the Museum of Geology, Jermyn-street, at 10 o'clock A.M., when Sir John Lubbock delivered the inaugural address in the section of Primæval Antiquities. The section of the discourse was the study of primæval architecture, and was divided into four parts, which treated of four distinct periods—namely, the Palæolithic age, when man co-existed in Western Europe with the mammoth and other extinct mammalia; the Neolithic, when, in the absence of metal, cutting instruments were made of stone; the bronze age, when weapons and implements were made of bronze; and the iron, when for such purposes bronze had been replaced by iron. At eleven o'clock the Dean of Westminster read the inaugural lecture in the section of History, of which he is president, in the theatre of the Royal Institution, Albemarle Street. In his address the very rev. gentleman related the traditions of ancient Westminster and traced with great minuteness the rise of the Abbey and Chapter, and the history of its constitution. Afterwards a large party of visitors attending the congress, numbering about a hundred, made an excursion to Waltham Abbey Church, on the history and architecture of which Mr. S. A. Freeman delivered a lecture. The party returned to town about half-past 6 P.M., after a most interesting excursion. An evening meeting was held at the Royal Institution, at which the Rev. J. R. Green read a paper on Thomas A'Becket, in which many of the peculiarities and anomalies in our institutions were appropriately noticed. Among others the lecturer alluded to the practice of electing sheriffs of Middlesex, who were chosen neither by the Crown nor the people of the county, but by a

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body independent of both. It was also mentioned that in the time of Athelstane it would appear that the people of London devoted themselves to agriculture rather than to mercantile pursuits, for in a code made at that period no allusion whatever is made to offences relating to commerce, while almost all its provisions are directed to the punishment of crimes connected with agriculture and the protection of its interests. Several of the members of the congress also attended a *conversazione* and concert given at South Kensington in aid of the funds of the West London School of Art. The concert took place in the old iron museum, which is now being cleared out with a view to transferring its contents to permanent premises, and the music was performed by the Wandering Minstrels, under the direction of the Hon. Seymour Egerton. On Thursday the inaugural lecture in the section of Architecture was delivered at 10 o'clock by Mr. Beresford Hope, M.P., in the theatre of the Royal Institute, Albemarle Street. Yesterday, Friday, the congress visited the Tower of London, on which Mr. Hepworth Dixon delivered a lecture. Those who had provided themselves beforehand with the new "Memorials" by Lord de Ros were the better able to follow the lecturer. Mr. H. Dixon leaves England next week for the Mormon country.

CORRESPONDENCE.

To the Editor of THE READER.

Sir,—My attention has been drawn to a statement in THE READER for June 30, which, in justice to the Americans, I cannot let pass uncontradicted. The impression conveyed by the paragraph in an evening contemporary, to which you refer, was quite correct. From the beginning, and with increasing energy up to the present time, the Americans have given to my undertaking the strongest support, and have done it in the most admirable manner.

HERBERT SPENCER.

London, July 12, 1866.

WAR BALLOONS.

To the Editor of THE READER.

Sir,—When the correspondent of the *Times* witnessed from a Bohemian watch-tower the battle of Sadowa, and when the whereabouts of the Crown Prince was veiled by hills and woods, it must have been palpable that a balloon view of the assembled forces would be well nigh as great a boon as the sole possession of the needle-guns.

How anxiously was the cloud of dust looked for betokening the arrival of the army of Silesia! We read that it had rained previously, and there was wanting a visible token of the approach of the Prussian columns. Where and how far away were they during these moments of suspense? Who could look over the hills, or mount like an eagle to tell of approaching support?

But science was ready to serve the cause if called upon, and would suggest an Aerial Observatory to set any doubts at rest as to the disposition of the entire forces. When I employed my military balloon at Aldershot and Woolwich Arsenal, I remember that Caesar's Camp and the Hog's Back, as well as Shooters' Hill (when we operated at Plumstead), were brought close under our view, although we were three miles away. This clearly proved that there is no absolute need of being within range in order to see what is going on. Had a well-appointed balloon been used near Königgrätz, I have no doubt that it would have been clearly seen and decided when and how the Prussians broke through the Austrian line at Klum. But if military men have their doubts about breech-loaders, how much more likely are they to have them about balloons? And yet there is no necessity for reconnoitring balloons to be liable to derangement from shot or shell. The military correspondent, from an elevated position, saw a good deal of the fight, and was out of harm's way. How much more might he have seen from a balloon car?

I trust that our own army may never wage war in mountainous districts without one. I believe the two great objections to their use by soldiers are, first, that they cannot always be used—if, for instance, the wind is rough—and secondly, that they are cumbrous attachments to the army. But what are these paltry and superable difficulties to the tremendous advantages of being able, say even occasionally, to command a bird's-eye view of friends and foes, and of knowing where they are situated, how they are employed, and so forth. No arm

of the service is available on all occasions, and because a balloon could not be let up and pulled down whenever imperatively required—because of this it is of no use, is a foolish and absurd argument. If when the elements are against their use, commanding officers might be irritated by temporary disappointment, still I am persuaded that, on very numerous occasions, proper care and skill would render balloons, as indeed they have already proved, immensely serviceable.

Tottenham.

HENRY COXWELL.

Τὸ Λοιπὸν.

To the Editor of THE READER.

Sir,—I have noticed several letters in your columns about the meaning of the words *καθεύδοντες τὸ λοιπὸν* in St. Matthew's Gospel. Surely there is not the slightest doubt about the literal meaning of those words, "the rest"—"quod restat." I have just met with the same words, used in the same sense, in Xenophon's "Anabasis," V., 1, 2, where Antileon says that he is tired of marching by land, and wishes to go the rest of the way by sea. *ἐπιθυμῶ, says he, πλεῖν τὸ λοιπὸν—to sail the rest, or what remains.*—I am, your obedient servant, J. A. GILES.

Alexandra College, Ealing, W., July 14.

NATIONALITIES.

To the Editor of THE READER.

Sir,—To any unprejudiced mind it must be obvious that the nationality question is mere hypocrisy. Setting aside Russia, France, Turkey, Spain, England, &c., let us look at Italy and Prussia. In the former kingdom (which, by-the-by, has for the last few years been a mere French dependency) the inhabitants of Sicily and Tuscany are of Greek extraction. The peoples of Piedmont and Lombardy are of Celto-Teutonic origin; while those of Venetia are descendants of the Vends, a Slavic people, and Italy has no more right to that district than to France or Great Britain. Language has nothing to do with the question, for if it had, the Spaniards, Portuguese, and French would each be entitled to a share of Italy. In Prussia, at least one third of the people are of Slavic origin. Those of the north and north-east are nearly all Slaves, and the rest are, to a considerable extent, mixed up with Celts. But the brigands of the North are determined not only to add to the number of their Slavic peoples, but also to include the Danish element. The Prussians not only lord it over the whole of Germany, but they claim nearly all the great men of Germany, and even some other parts of the Continent. It is only within the last few days that I have been reminded by Prussians that the following, among other distinguished men, are natives of Prussia:—Bach (S.), Glück, Göthe, Grimm, Gutenberg, Haydn, Herschell, Holbein, Kepler, Kneller, Körner, Kotzebue, Leibnitz, Luther, Mendelssohn, Mozart, Puffendorf, Richter, Hans Sachs, Schlegel, Schiller, and Schwarz. I will leave it to your readers to discover whether there is any truth in this assertion.

R. S. C.

[We willingly give insertion to the remarks of our enthusiastic correspondent. Whilst we agree with him as to the weakness of the principle of nationalities, we fear his sympathies have been a little perverted by the action of some rude soldier, who did not know his worth.—Ed.]

CÆSAR'S INVASION OF BRITAIN.

[No. III.]

To the Editor of THE READER.

Sir,—We have now (unless our premises can be displaced) established the two following propositions: (1) That Cæsar arrived off Britain on the 27th August, B.C. 55; and (2) that he lay at anchor until 2h. 18m. P.M. on that day. He then put his fleet in motion, "having got both wind and tide at the same time in his favour"—"et ventum et æstum uno tempore nactus secundum." (B. G. iv. 23.) Which way was the tide running, and which way was the wind blowing?

First, as to the tide.

On looking at the Admiralty Tables, we find that the Establishment, or time of high water, at Dover on the day of full moon is at 11h. 12m. A.M. It is agreed on all hands that the full moon occurred on 31st August, B.C. 55, at 3 A.M. High water at Dover, therefore, would take place on that day at 11h. 12m. According to the Admiralty directions, "the mean interval of time between two consecutive high waters is about 12h. 25m." ("Tide Tables for English

Ports," 1859, p. 99.) On 27th August, B.C. 55, therefore, it would be high water at Dover at 7h. 52m. A.M. However, the Establishment, or time of high water, at a place at full moon is calculated in the Admiralty Tables on the basis that the moon's transit was at 12 o'clock, or midnight, whereas the full moon on 31st August, B.C. 55, was at 3 A.M. on that day; and this introduces a disturbing element. We shall, therefore, attain greater accuracy if we take the actual time of high water at Dover on the fourth day before some full moon when the transit occurred about the same time with the moon's transit on 31st August, B.C. 55—viz., at 3 A.M. I have before me the Admiralty Tide Tables for the year 1859; and I find that in December of that year the full moon on 10th December was at 3.13 A.M., which, therefore, differs by 13 minutes only from the full moon at 3 A.M. on 31st August, B.C. 55. Thus, 27th August, B.C. 55, the day of Cæsar's arrival, will correspond with 6th December, 1859; and 31st August, B.C. 55, will correspond with 10th December, 1859. Now, high water at Dover on 6th December, 1859, was at 7h. 31m. A.M. According to the Admiralty directions in the same book, p. 110, "about 1 mile S.S.E. of the South Foreland Lighthouse the stream begins to set to the eastward about 1h. 30m. before high water on the shore at Dover, and runs from N.E. by E. to E.N.E. about 5½ hours, or till 4 hours after high water. It then turns, and sets W.S.W. & W. about 7 hours." The tide, then, on 27th August, B.C. 55, began to flow eastward, or up Channel, at 6h. 1m. A.M., and so continued until 11h. 31m., and then turned westward, or down Channel, until 6.31 P.M. In other words, if we reject minute fractions, the tide was eastward from 6 A.M. to half-past 11 A.M., and then westward from half-past 11 A.M. to half-past 6 P.M.

The late Dr. Cardwell, in maintaining that Cæsar landed at Deal, in opposition to Mr. Lewin's theory that he landed on Romney Marsh, suggested that the Admiralty Tables, though correct enough for mid-channel, were inapplicable to the in-shore tides. The question was taken up by Earl Stanhope, the President of the Society of Antiquaries, and at his instance, or rather at that of the Society, the Admiralty, with great liberality, directed Surveyor Calver to ascertain the state of the tides at Dover in-shore (i.e. within the limits of 1½ or 2 miles from the shore), between the South Foreland and Shakespeare's Cliff. The report of the Surveyor, which at the same time was accompanied with confirmatory details, was as follows: "From the average of these observations, it appears that when high water at Dover occurs about 7h. 30m. A.M. the in-shore flood or easterly-going stream turns 4h. 48m. after it is high water upon the shore. Taking, then, for example, a 7h. 31m. high water, and assuming that the ebb, or westerly-going stream, runs on the average for 6½ hours, it follows that the flood or easterly-going stream on that day would turn off Dover at 12h. 19m., and the succeeding ebb or westerly-going stream would run to the westward until 6.34 P.M." ("Archæologia" Vol. 39, p. 277.) Thus, the only differences between the off-shore and in-shore tides are, that off-shore, the tide, when it is high-water at Dover at 8.31 A.M., turns westward at 11.31 A.M. and in-shore at 12.19. Off-shore the tide continues to run westward until 6.31 P.M., and in-shore until 6.34 P.M. If Cæsar, then, at the ninth hour, Roman time—i.e., at 2h. 18m. P.M. of our time—sailed with the tide, he must necessarily, without the least shadow of a doubt, have gone westward towards Hythe.

But the question may be asked, Does it follow, because Cæsar lay at anchor until the ninth hour, or until 2.18 P.M., that he weighed anchor at that precise time; or may there not have elapsed some considerable interval before he set sail? In the first place, the very statement that he lay at anchor until the ninth hour implies that he did not lie at anchor beyond that time. But further, the whole tenor of the narrative shows that the joining of the fleet and the setting sail were contemporaneous. Cæsar himself, with his principal officers, had arrived at the fourth hour, or about a quarter to ten, and he employed the interval that when the whole force was assembled there might not be a moment's delay. By 2.18 P.M. all the vessels had joined, and then, dismissing his officers, having wind and tide in his favour, he hoisted the signal for weighing anchor. "His dimissis et ventum et æstum uno tempore nactus secundum dato signo et sublatis anchoris," &c. (B. G. iv. 23.) But the suggestion that an interval occurred between 2.18 P.M. and the

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actual start is worth nothing unless it can be shown that Cæsar waited until the tide turned eastward in the direction of Deal. But the westward-going stream continued until half-past 6 P.M., so that to take the tide eastward Cæsar must have remained at anchor for upwards of four hours; and it is incredible that he could have wasted all his time without the least allusion to it. But there is this additional difficulty: when he did weigh anchor he had to carry the fleet 8 miles to the place of disembarkation, and some time must be allowed for the passage. Cæsar, in the swiftest vessels, had spent nearly ten hours in sailing thirty miles, at the rate of little more than three miles an hour, and the rest of the fleet had occupied more than fourteen hours, at the rate of little more than two miles an hour. The wind, however, had latterly been adverse, and we will, therefore, take another instance. In returning from the second expedition, about the time of the equinox, Cæsar set sail at 9 P.M., and reached Gaul at 6 A.M. (B. G., v. 23)—i.e., at the rate of $3\frac{1}{2}$ miles an hour. We cannot, therefore, suppose that when Cæsar weighed anchor on the first expedition the whole fleet would, even with wind and tide in their favour (including arrangements for the descent), have sailed at a greater rate than four miles an hour—that is, they would not reach their destination until after two hours. If, therefore, they went with the eastern tide at half-past six P.M., they could not have gained their landing place until half-past eight P.M., or more than an hour and a-half after sunset.

Secondly, as to the direction of the wind.

The great Captain has not informed us from what quarter the wind blew when he embarked from Boulogne, but he had *idoneam tempestatem*, or favourable weather; and therefore probably a wind from the S.E. To the same effect is the statement that the eighteen transports at the higher port, or Ambleteuse, were unable to join him at Boulogne, for as Ambleteuse is due north from Boulogne, the wind must have been a southerly one. Assuming, then, that the whole fleet when assembled was lying off some point between Sandgate and the South Foreland, a wind from the S.E. would be just as suitable for sailing westward towards Hythe as eastward towards Deal. But, in fact, it is implied as plainly as if expressed that in the course of the passage the wind had shifted from S.E. to East. When Cæsar weighed anchor at 2.18 P.M., he did so "having got (nactus) both wind and tide in his favour" (B. G. iv. 23), and the word "nactus" indicates a change either of the wind or tide. But the tide had been running in the same direction for the last two hours, and would continue so for the next four hours and upwards. The change referred to, then, must have been in the wind. How else can we account for the length of time consumed in the voyage? for had the wind been favourable all the way, it is inconceivable that Cæsar, in the *fastest* vessels, should have occupied nearly ten hours, and the other vessels more than fourteen hours in a passage of 20 miles!

Consider also what occurred to the eighteen transports at Ambleteuse. A wind that was favourable to a voyage from Boulogne to Britain must have been equally so from Ambleteuse to Britain, and Cæsar had expected them to join him in the offing. He appears, however, to have miscalculated the time required for shipping cavalry, and he was obliged, therefore, to proceed without them. But that they afterwards started from Ambleteuse is implied from the expression that they were *too slow* about the embarkation—"ab quibus cum paulo tardius esset administratum" (B. G. iv. 23)—and when they at last were off it is said that they were unable (which must have been from a change of wind) to hold on their course and reach the island. "Equites cursum tenere atque insulam capere non poterant." (B. G. iv. 26.) The eighteen transports were, no doubt, from their burden, slow and heavy sailers, and consequently, while the fleet generally made the latter part of their passage with difficulty, the eighteen transports could not advance at all, but returned to the Continent.

Not only had the wind shifted from S.E. to E. during the passage, but it continued to blow from the E. for several days consecutively; for the eighteen transports, though so much wanted and of vital importance, could not renew the attempt to cross the Channel until four days afterwards, when again a storm arose, and they were beaten back, "post diem quartum," &c. (B. G. iv. 28.) All these circumstances tend to show that the wind had veered round to the east; and if so, it would be in the right quarter, as

Cæsar sailed westward in the direction of Hythe, but would be adverse to him in sailing eastward in the direction of Deal.

If any doubt remain as to the quarter of the wind, it must give way before the facts already adduced as to the set of the tide. It can be proved *demonstratively* that the tide was running westward; and therefore the wind, as it was equally favourable to Cæsar with the tide, must have been blowing from the east.

I shall conclude with a remark or two upon the expression of Cæsar that on weighing anchor he "advanced" or "went forward," "*ab eo loco progressus*." (B. G. iv. 23.) A voyager from Boulogne to Britain would strike the part between Sandgate and Dover at right angles; so that, as regards the configuration of the coast, Cæsar on quitting his anchorage at a mile from the shore might be said to "advance" whether he turned to the right or to the left. But, in truth, the word *progressus* furnishes an argument that Cæsar sailed towards Hythe. Relatively to Boulogne, Britain lay on the west, and the island itself was considered by the Greeks and Romans to lie so far west that they placed it opposite Spain. To advance, therefore, towards Britain, would be to steer, not eastward towards Deal, but westward towards Hythe. We cannot have a stronger proof of this than in the expedition next after the time of Cæsar, when the conquest of Britain was achieved by Claudius. The armament was collected, as before, at Boulogne, but as Britain was regarded popularly as outside the habitable world, the soldiery refused to embark. While matters were at a standstill a brilliant meteor shot across the heavens, as if to lead them on to a career of glory, and, encouraged by the happy omen, the legion stepped courageously on board. What was the track of the meteor? It was "to the west, in the direction that they were about to sail." *πρὸς τὰς δυσμὰς, ἢ περὶ ἔπλεον, διέδραμε.* (Dion. lx. 19.)

AMICUS.

MISCELLANEA.

A RUMOUR has reached us that in one of the bone-caves which have been explored by Dr. Dupont, under the orders of the Belgian Government, there has been found a jaw which affords such doubtful characters that it is uncertain whether it belonged to man or ape. It was found, it is said, with bones of elephant, rhinoceros, and hyæna. The presence at this moment of an official delegate from the Anthropological Society of London at the Dinant bone-caves is a fortunate occurrence; and we trust that his forthcoming report may determine the value and true bearing of this all-important discovery.

We hear from another quarter that two bones were discovered, to which an antiquity of fifty millions of years before the Flood, of which great evidences are there accumulated, has been attributed.

DR. ANGUS SMITH has published the second annual report of his proceedings as inspector under the Alkali Act. Compared with last year's report, the present one is very short, but it is very satisfactory. By the use of improved apparatus, and the exercise of constant watchfulness on the part of the manufacturers, the average percentage of hydrochloric acid gas which is now condensed is 98.111, the escape being 1.0889. This appears to be very small when calculated as a percentage, but the manufacture of alkali is carried out on such a large scale in this country that the absolute quantity of hydrochloric acid which now escapes from alkali works and is showered down on the surrounding country, amounts to 5.5933 tons during every twenty-four hours. In round numbers 500 tons of gas are evolved every day, and of this five tons escape. The Act allows an escape of five per cent, and if this be exceeded the inspector has the power to prosecute. Although in one or two cases the amount has been exceeded, there have been no prosecutions, as the inspector was satisfied that there was no intention to transgress, and that steps were being taken to avoid the excessive escape for the future. The number of works now under inspection is ninety, and the manufacturers appear to have taken very kindly to the Act. In one or two cases where actions have been brought against owners of chemical works for damage to the crops, the evidence of the inspector was very valuable to the defendants, as showing that the injury had not proceeded from their works. The report is not drawn up very carefully, reference being made to a plate which does not appear, and the works of the

British Metal Extracting Company at Oldbury are spoken of as having caused annoyance to the neighbourhood by the escape of "chloride of iron." It is not very clear how this could have happened.

THE poems of George Arnold, the American, compared by some of his countrymen to Heine, who died recently at the age of twenty-one, have just been published by Ticknor and Fields, of Boston. We select these stanzas from the longest, "Drift:"—

O, cool, green waves that ebb and flow,
Reflecting calm blue skies above,
How gently now ye come and go,
Since ye have drowned my love.

Ye lap the shore of beaten sand,
With cool, salt ripples circling by;
But from your depths a ghostly hand
Points upward to the sky.

O, waves! strew corals white and red,
With shells and strange weeds from the deep,
To make a rare and regal bed
Whereon my love may sleep:

May sleep, and, sleeping, dream of me
In dreams that lovers find so sweet;
And I will couch me by the sea,
That we in dreams may meet.

The following was written only a few days before his death:—

IN THE DARK.

All moveless stand the ancient cedar trees
Along the drifted sand-hills where they grow;
And from the dark West comes a wandering breeze,
And waves them to and fro.

A murky darkness lies along the sand,
Where bright the sunbeams of the morning shone;
And the eye vainly seeks, by sea and land,
Some light to rest upon.

No large, pale star its glimmering vigil keeps;
An inky sea reflects an inky sky;
And the dark river, like a serpent, creeps
To where its black piers lie.

Strange, salty odours through the darkness steal,
And through the dark the ocean thunders roll;
Thick darkness gathers, stifling, till I feel
Its weight upon my soul.

I stretch my hand out in the empty air;
I strain my eyes into the heavy night;
Blackness of darkness! Father, hear my prayer,
Grant me to see the light!

MR. MURRAY announces "A Knapsack Guide to the Tyrol;"—"King George the Third's Correspondence with Lord North during the American War," 1769-82, by W. Bodham Donne;—"Correspondence of the late Earl Grey with King William the Fourth, and with Sir Herbert Taylor," edited by Earl Grey;—"Domesticated Animals and Cultivated Plants," by Charles Darwin, F.R.S.;—"The Children of the Lake," a poem, by Edward Sallisbury;—"Mémorial of Sir Charles Barry, R.A.," by his son, Alfred Barry;—"On the Actual State of Christianity, and the Recent Attacks made upon it," by M. Guizot;—"Memorials of Westminster Abbey," by the Dean of Westminster;—"The Civil Wars of France and England," by General the Hon. Sir Edward Cust, D.C.L., author of "Annals of the Wars of the 18th and 19th Centuries,";—"Blind People, their Works and Ways," by Rev. B. G. Johns, M.A.;—"A History of Architecture in all Countries," Vol. II., by James Fergusson, F.R.S.;—"A Classical and Biblical Atlas," under the superintendence of W. Smith, LL.D., Parts I. and II.;—"A Smaller Classical Mythology," edited by W. Smith, LL.D.;—"History of the Christian Church," Vol. III., by J. Robertson;—"The Student's Manual of Scripture History," edited by W. Smith, LL.D.;—"The Student's Manual of Modern Geography," by Rev. W. L. Bevan;—"The Complete Poetical Works of Lord Byron," Pearl Edition, in one Vol.;—"The Metallurgy of Iron and other Metals," Vol. III., by John Percy, M.D., F.R.S.;—"The Brick and Terra-Cotta Buildings of North Italy," by Lewis Gruner;—"A New Biographia Britannica";—"The History, Geography, and Antiquities of Media and Persia," being the fourth and concluding volume of the Ancient Eastern Monarchies, by Rev. George Rawlinson, M.A.

MESSRS. TRUBNER AND Co. call attention to a Chinese "Murray." It appears in the shape of a neat pamphlet of some seventy pages, entitled "Notes for Tourists in the North of China, by N. B. Dennys;" and is published by Messrs. A. Shortrede and Co., Hong Kong. In a prefatory notice, dated March 28, 1866, the author states that his work is offered to the public as a few notes having for their object to relieve the

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traveller from the embarrassment into which he naturally falls when journeying in so uncivilized a region as the Province of Chih-li, in which Pekin is situated; but does much more than this. The pamphlet contains very full descriptions of Tientsing, Pekin, and the circumjacent country, with valuable notes on the productions, objects of curiosity, public buildings, &c., of the capital of China, besides itineraries from Pekin to the Mongolian frontier and the passes of the Great Wall. Mr. Dennys, having resided for some two or three years at Pekin, as an officer in Her Majesty's Consular Service, had the best opportunities of familiarizing himself with the peculiarities of the region he has undertaken to describe for the benefit of travellers. His work is illustrated with several useful plans of Pekin, and of the route between that city and the sea.—The same publishers also announce the speedy publication of a Malayo-English Grammar, by Mr. H. N. Van der Tuuk.

MR. S. O. BEETON has just issued, in one sheet, a Map intended to embrace the whole area of the War. So rapid, however, is the advance of the Prussians, that it is possible within a few days the Austrian host will be located entirely outside its limits. It will, however, still be useful, if only to show the vast territory over which Prussia is dictator.

THE *Pall Mall Gazette* informs us that "a little while since it was announced by a clergyman that 'a glass of sherry, with a biscuit, at 11 A.M., half-a-pint of bitter ale at an early dinner, and another glass of sherry in a cup of arrowroot at supper,' would be found efficacious in the prevention of cholera amongst the labouring classes." Success has made our contemporary very aristocratic. We are irresistibly reminded of a certain Duke of Norfolk and his pinch of curry-powder.

MR. WASHBOURNE announces the following books by Roman Catholic writers: By the Rev. Dr. Doyle, "Vesper Book of St. George's Cathedral, Southwark, with an Explanation of the Ceremonies and Forms of Prayer;" by the Ven. Dr. Challoner, "Grounds of the Catholic Doctrine, as contained in the Profession of Faith;" "A General History of Modern Europe, with a Preface, by the Very Rev. Dr. Weathers, President of St. Edmund's College, Old Hall, Ware, Fourth Edition;" "A Letter to George Augustus Simcox, Esq., Fellow of Queen's College, Oxford; from a Friend who has lately been received into the Catholic Church."

WE have quoted elsewhere some of the theories about Homer. Here is one more: In a recently published book, Mr. James Hutchinson, of Cape Town, Cape of Good Hope, points out remarkable resemblances in the *Iliad* of Homer and the *Rāmāyana* of Valmiki. He contends that the rape of Helen and the siege of Troy are really but the carrying off of Sitā and the capture of Lanka done into Greek verse. He goes further and asserts his conviction that Homer not only worshipped the same deities as the Hindus, but was himself a Hindu.

HIPPOPHAGY has become a recognized subject of legislation in Paris. Special slaughter-houses must be erected for that "viande." The joints must receive an official stamp. Horses which have died a natural death, sick horses, and horses slaughtered when in a state of fever, or wounded, or in an extremely bad condition, are not to be allowed for food.

A subscription has been opened in Paris for the colonists who have been ruined by the plague of locusts in Algeria.

ON Tuesday was buried in Highgate Cemetery Mr. William Hookham Carpenter, who for more than twenty years has filled with great advantage to the public the post of keeper of the prints and engravings in the British Museum. Mr. Carpenter was born in 1792, the son of Mr. James Carpenter, a publisher in Old Bond Street, with whom he was associated in business for some years. On his marriage with Miss Geddes he established himself in Brook Street, and published Spence's "Anecdotes," edited by Mr. S. W. Singer; the "Discourse" of Sir William Jones, and Burnet's "Treatise on Composition." After this he rejoined his father, and in 1844 published "Pictorial Notices; a memoir of Sir Anthony Van Dyck, with a descriptive catalogue of the etchings executed by him, and a variety of interesting particulars relating to other artists employed by Charles I." In 1845 Mr. Carpenter was appointed to the post of keeper of the prints, &c., at the Museum, and in the past twenty years he has nearly doubled the number of the collection. Shortly after his appointment he procured the Coningham collection of early Italian drawings; then followed

selections from Rembrandt's etchings (from the collections made by Baron Verstolk and the Earl of Aylesford), valuable Dutch drawings belonging to Baron Verstolk (1847), etchings and engravings belonging to Mr. Hawkins, several thousands of rare historical prints, and some fine drawings by the old masters, some of which had belonged to Sir Thomas Lawrence. In 1154 Mr. Carpenter was sent to Venice by the trustees of the Museum to report on a very curious volume of drawings by Jacopo Bellini; in 1855 the nation acquired it by purchase. Mr. Carpenter was elected a member of the Academy of Fine Arts at Amsterdam in 1847, F.S.A. in 1852, and served as a member of the council of the Society of Antiquaries in 1857-8. He was a trustee of the National Portrait Gallery, and was member of the committee for managing the department of British engravings in the International Exhibition of 1862.

M. PLATEAU, of Ghent, has recently published a sketch of his researches on the Vision of Fish and the Amphibia. His investigations were only extended to fresh-water fish, owing to the difficulty of procuring others in a fresh state. He finds that the cornea is flattened in the centre, but that a curvature is very apparent at the border. The crystalline lens is always spherical, and the liquid which fills the cavity of the eye is of the same, or nearly of the same specific gravity as water. For purposes of comparison he has examined the eyes of aquatic birds, and of frogs, and of some aquatic mammalia, and he finds that in all the cornea is sensibly flattened in the centre, and the crystalline lens approaches the form of a sphere. In order to show that in the fish vision is as distinct in air as in water, and that this distinctness is independent of any power of accommodation, he prepared a recently removed eye in such a manner as to show the formation of the image of external objects. He found that the distances of distinct vision were sensibly the same, whether the organ was in air or immersed in water. These experiments were made upon the eyes of two or three kinds of fresh-water fish and frogs. He did not extend them to the eyes of aquatic birds and mammals, but instances the similarity of structure with the eyes of fish as a proof that the same principle prevails in both cases. The memoir and plates will appear in the forthcoming volume of the *Mémoires des Savants Etrangers* of the Belgian Academy.

AN ingenious application of the well-known process of moulding blocks of concrete for building purposes was patented some time back. The inventor, a Mr. Tall, proposes to erect walls, houses, and other structures, by literally casting them of concrete, in the place they are intended to occupy. An ordinary concrete foundation is first laid, and upon the foundation horizontal frames, constructed of boards lined with zinc or other metal, are set up on edge, so as to form a kind of trough for receiving the concrete. By the insertion of suitable cores, holes for the insertion of the joists, or for other purposes, may be moulded in the concrete as the work proceeds. The proprietor of the patent is now in Paris, superintending the erection of some houses on this principle, and we believe it is the intention of the French Emperor to build some labourers' cottages of this kind at one of the Imperial farms. The invention will be illustrated at the Paris Exhibition, where a space has been set apart for the erection of buildings of various constructions, from the hut of the Laplander to the chalet of the Swiss peasant.

THE inhabitants of Baku, on the Caspian Sea, have recently utilized the emanations of carburated hydrogen gas which rise from the waters, for lighting purposes. The gas is collected by means of large funnel-mouthed tubes, which are attached to floating rafts and dip some feet into the water. Baku, it may be remembered, was the sacred city of the Guebres, or Fire-worshippers, and the neighbourhood abounds with naphtha springs and "blowers" as they are called in the north of England, which consist of streams of inflammable gas issuing from the ground. The most extensive of these "blowers" is known by the name of the "perpetual fire," and is situated some miles to the north-east of Baku. It is an object of great veneration, and is said never to have been extinguished.

A LARGE share of the public attention has been given to questions connected with fisheries during the last few months. First there was the fish exhibition at Bergen last autumn, and at the beginning of the present year the British Fisheries Commission published their report and a large volume of evidence. M. Van Beneden, who was despatched to Bergen by the

Belgian Government, has recently completed his report upon the exhibition. In addition to this the Belgian Government ordered an inquiry into the state of their own fisheries, and the best means of improving and preserving them. The results are now in course of publication amongst the Parliamentary documents issued by the Government of that country. In conclusion, we have to mention the fish exhibition now open at Arachon, a village in the south of France.

ONE of the earliest signs of the effect of the Continental war upon scientific matters is shown by a notice which has been circulated, announcing that the forty-first meeting of German naturalists, which was to have been held at Frankfort on the 17th of September and five following days, is indefinitely postponed.

MEETINGS FOR NEXT WEEK.

THIS DAY.
ARCHAEOLOGICAL INSTITUTE.—Excursion to Windsor and Eton.
MONDAY.
ARCHAEOLOGICAL INSTITUTE.—Meetings of Sections at 10 A.M. At 3 P.M., Visits to St. Paul's, Lambeth Palace, Fulham.
TUESDAY.
ARCHAEOLOGICAL INSTITUTE.—Meetings of Sections at 10 A.M. Excursion to Hampton Court.
WEDNESDAY.
ARCHAEOLOGICAL INSTITUTE.—Meeting of Members at 10 A.M. General Concluding Meeting.
FRIDAY.
QUEKETT MICROSCOPICAL CLUB, 8.—Annual General Meeting.
SATURDAY.
ROYAL BOTANIC, 3.45.

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DR. J. COLLIS BROWNE'S CHLORODYNE.

—Vice-Chancellor Sir W. Page Wood stated publicly in Court that Dr. J. Collis Browne was undoubtedly the Inventor of Chlorodyne, that the whole story of the defendant Freeman was deliberately untrue, and he regretted to say it had been sworn to.—See the *Times*, July 13, 1864.

DR. J. COLLIS BROWNE'S CHLORODYNE.

—The Right Hon. Earl Russell communicated to the College of Physicians and J. T. Davenport that he had received information to the effect that the only remedy of any service in Cholera was Chlorodyne.—See *Lancet*, Dec. 31, 1864.

DR. J. COLLIS BROWNE'S CHLORODYNE.

—Extract from *Medical Times*, Jan. 12, 1866.—"Is prescribed by scores of orthodox practitioners. Of course it would not be thus singularly popular did it not 'supply a want and fill a place.'"

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